JULY | 1957

products finishing

FINISHES ON METAL PRODUCTS

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NOT ONE BUT 3 APPROVALS make sure your product finish performs . . . *at both ends of the line!*

Once our laboratory has developed a formulation to meet your product finish problem, a test batch is made and checked for every critical quality. Before filling the order, the production run is checked again against the original formulation. If the material is warehoused, in 30 days it's checked a third time.

These 3 separate checks are but one of the ways Sherwin-Williams makes sure your finish performs *at both ends of the line* — on your production line — and on your product in use.

Similar quality controls on raw materials keep every finish reorder precisely the same as the day it was accepted.

If you manufacture appliances, furniture, metal or wood products of any kind, be sure at both ends of the line! Investigate Sherwin-Williams Product Finishes . . . and benefit from years of experience in methods and systems, too. Call your nearest Sherwin-Williams Representative or write The Sherwin-Williams Co., General Industrial Division, Cleveland 1, O. In Canada: 2875 Centre St., Montreal.

SHERWIN-WILLIAMS **INDUSTRIAL FINISHES**

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1	17	33	49	65	81	97	113	129	145	301-2nd Cover		330	346	362	378	394	410	426	442
2	18	34	50	66	82	98	114	130	146	302-3rd Cover		331	347	363	379	395	411	427	443
3	19	35	51	67	83	99	115	131	147	303-4th Cover		332	348	364	380	396	412	428	444
4	20	36	52	68	84	100	116	132	148	304	317	333	349	365	381	397	413	429	445
5	21	37	53	69	85	101	117	133	149	305	318	334	350	366	382	398	414	430	446
6	22	38	54	70	86	102	118	134	150	306	319	335	351	367	383	399	415	431	447
7	23	39	55	71	87	103	119	135	151	307	320	336	352	368	384	400	416	432	448
8	24	40	56	72	88	104	120	136	152	308	321	337	353	369	385	401	417	433	449
9	25	41	57	73	89	105	121	137	153	309	322	338	354	370	386	402	418	434	450
10	26	42	58	74	90	106	122	138	154	310	323	339	355	371	387	403	419	435	451
11	27	43	59	75	91	107	123	139	155	311	324	340	356	372	388	404	420	436	452
12	28	44	60	76	92	108	124	140	156	312	325	341	357	373	389	405	421	437	453
13	29	45	61	77	93	109	125	141	157	313	326	342	358	374	390	406	422	438	454
14	30	46	62	78	94	110	126	142	158	314	327	343	359	375	391	407	423	439	455
15	31	47	63	79	95	111	127	143	159	315	328	344	360	376	392	408	424	440	456
16	32	48	64	80	96	112	128	144	160	316	329	345	361	377	393	409	425	441	457

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4	20	36	52	68	84	100	116	132	148	304	317	333	349	365	381	397	413	429	445
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6	22	38	54	70	86	102	118	134	150	306	319	335	351	367	383	399	415	431	447
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8	24	40	56	72	88	104	120	136	152	308	321	337	353	369	385	401	417	433	449
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12	28	44	60	76	92	108	124	140	156	312	325	341	357	373	389	405	421	437	453
13	29	45	61	77	93	109	125	141	157	313	326	342	358	374	390	406	422	438	454
14	30	46	62	78	94	110	126	142	158	314	327	343	359	375	391	407	423	439	455
15	31	47	63	79	95	111	127	143	159	315	328	344	360	376	392	408	424	440	456
16	32	48	64	80	96	112	128	144	160	316	329	345	361	377	393	409	425	441	457

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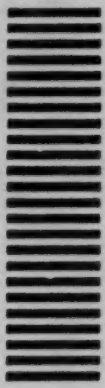

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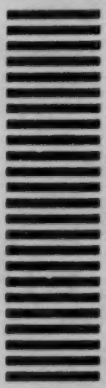

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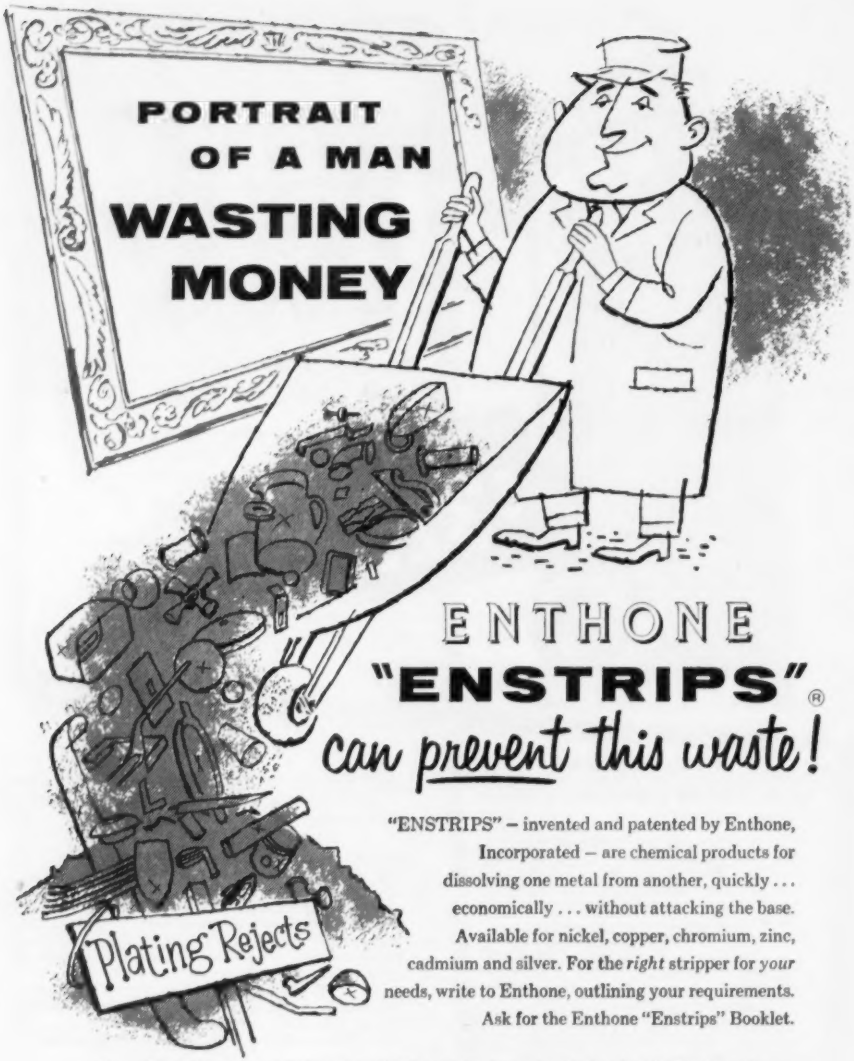

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products finishing

Vol. 21 No. 10 July, 1957

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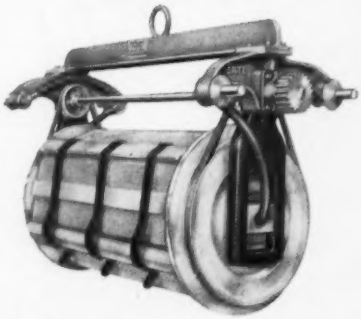

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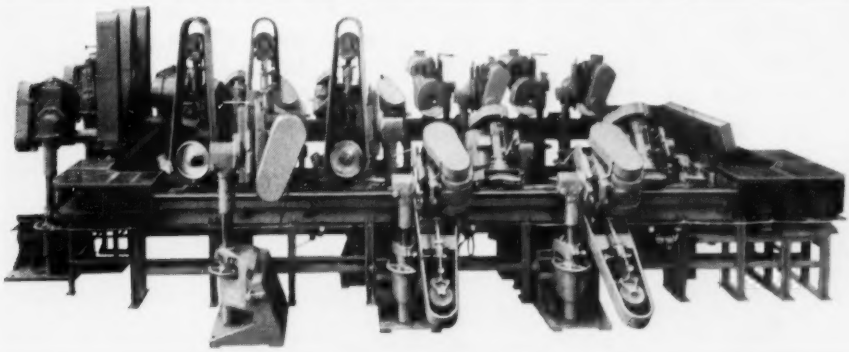

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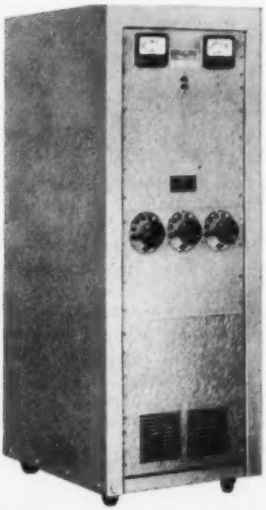

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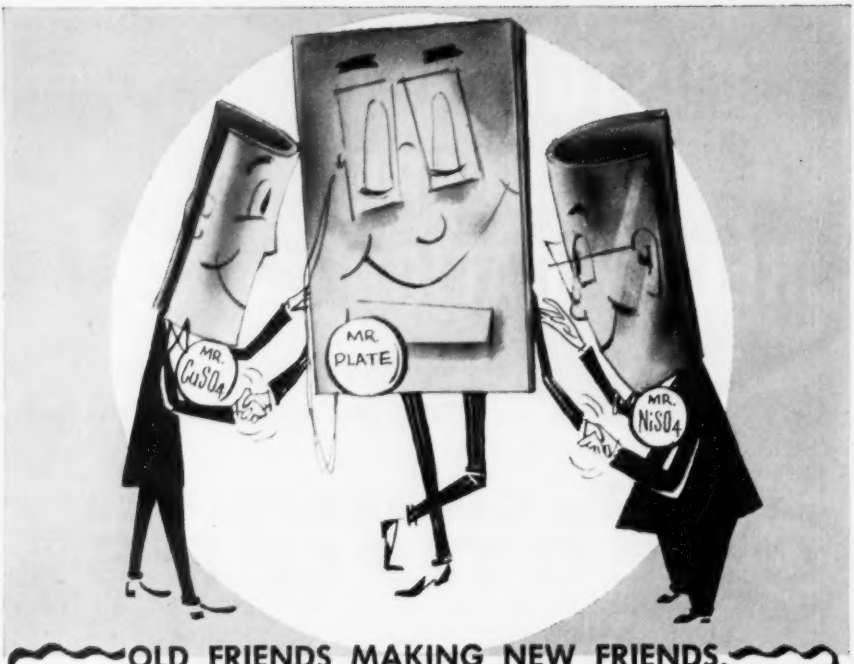

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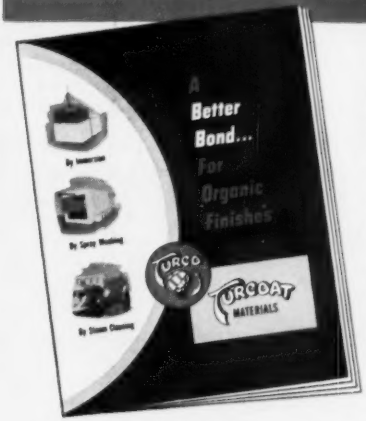

Complete PHOSPHATING Reference Chart Includes:

- Description of phosphating
- Diagram of how phosphating holds paint to metal
- Illustrations of what phosphating can do
- Types of coatings available
- Recommended uses
- Applicable Government Specifications
- Methods of application and equipment requirements
- Metals to be used on
- Coating weights
- Detailed operation cycles

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Only Turco offers a truly full line of government approved coating materials for use in *any* conceivable processing set-up prior to the use of organic finishes. Only Turco offers a staff of 160 technically trained representatives located in all parts of the country to give immediate 'round-the-clock service. No wonder Turco is adding new phosphating accounts at a phenomenal rate. There are many reasons why, when it comes to *paint adhesion*, more and more industrial concerns are turning to the Turcoat line. The Turcoat booklet lists them all.

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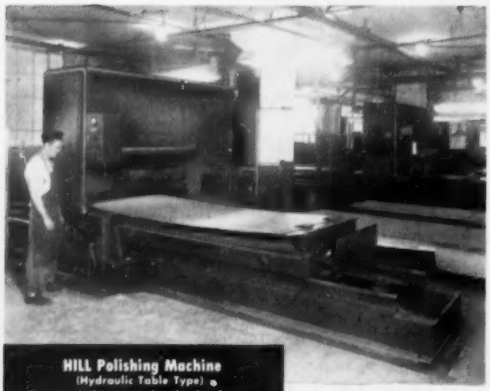
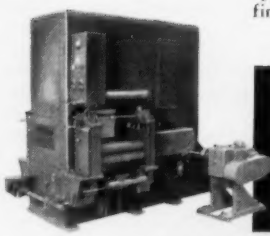
For FINISHING
Any and All
FERROUS and NON-FERROUS MATERIALS . . .



HILL Polishing Machine
(Hydraulic Table Type)
For polishing individual sheets and plates. Hydraulic reciprocating table with centralized controls.

The basic HILL two-roll vertical head with upper steel idler roll and lower rubber covered contact or work roll (both dynamically balanced) over which the endless abrasive belt travels.



HILL Grinding and Polishing Machine
(Pinch-roll Type)
For pre-finishing, conditioning and polishing. Used as single units or in multiple units for progressive line polishing in wet or dry operations.

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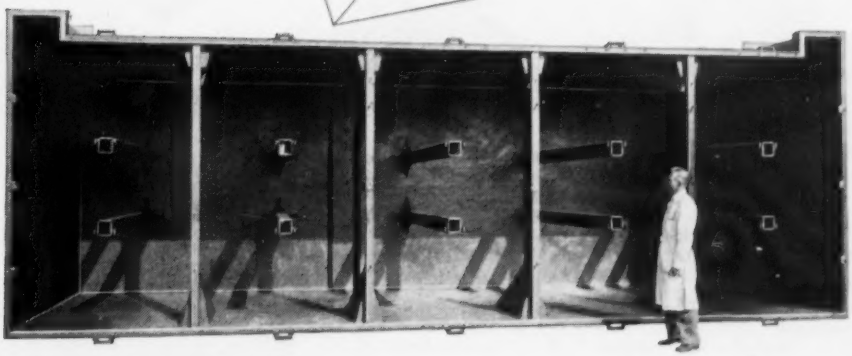

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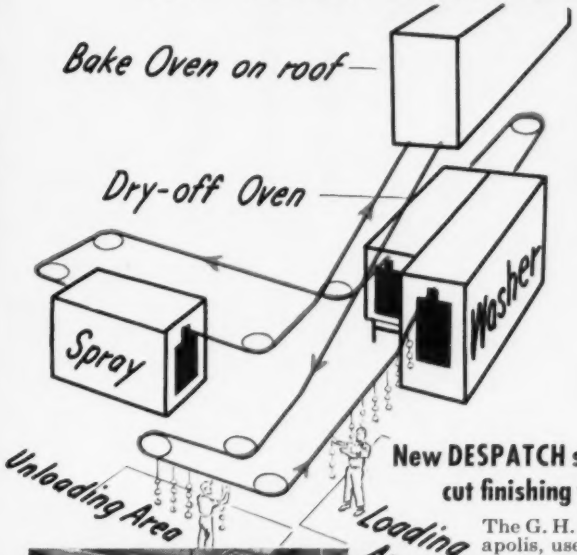
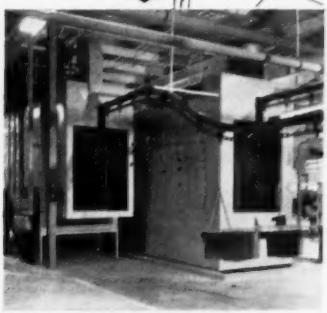


FLOW DIAGRAM shows perspective (not actual scale) of new metal processing and paint finishing system in the G. H. Tennant Company's new plant. Conveyor is 500 ft. long; travels 8 ft. per minute. The 74 ft. bake oven is built on the roof to save floor space. Just-sprayed parts travel up and into the oven through its underside opening. Baking lasts eight minutes at 330° F.

New DESPATCH system helps Tennant Co. cut finishing time 80 man-hours to 24

The G. H. Tennant Company, Minneapolis, used to have trouble painting production quantities of 1000 different parts for their power sweepers, floor machines, scarifiers, roof scrapers, and concrete routers. This new DESPATCH continuous-conveyor finishing system speeds washing and drying of *all* parts (they weigh from ounces to 800 pounds) and speeds spraying and baking of the prime coat and the bright orange or cream finish coat. The system enables Tennant to do in 24 man-hours what used to take 80 man-hours, and assures a superior finish.

The entire system was engineered, built and installed by DESPATCH in cooperation with the Tennant Company. DESPATCH can help you. There's a DESPATCH-trained resident engineer near you . . . talk to him about your finishing requirements.



ALL PARTS first enter 3-stage 44 ft. washer at right, then return through 34 ft. dry-off oven at left. Note master control panel alongside dry-off oven. In washer, surface of metal parts is converted to iron-phosphate coating to prevent rust and corrosion. Temperature of dry-off oven is varied from 350° to 400° F., depending on size of parts.

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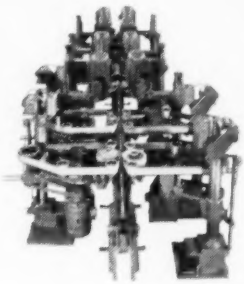

This Acme automatic straight-line machine completely polishes and buffs 1,400 pieces per hour. Four Acme G-3 belt polishing heads with floating back-up wheel and vertical oscillation are followed up by eight Acme G-3 buffing lathes.

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ACME MANUFACTURING COMPANY

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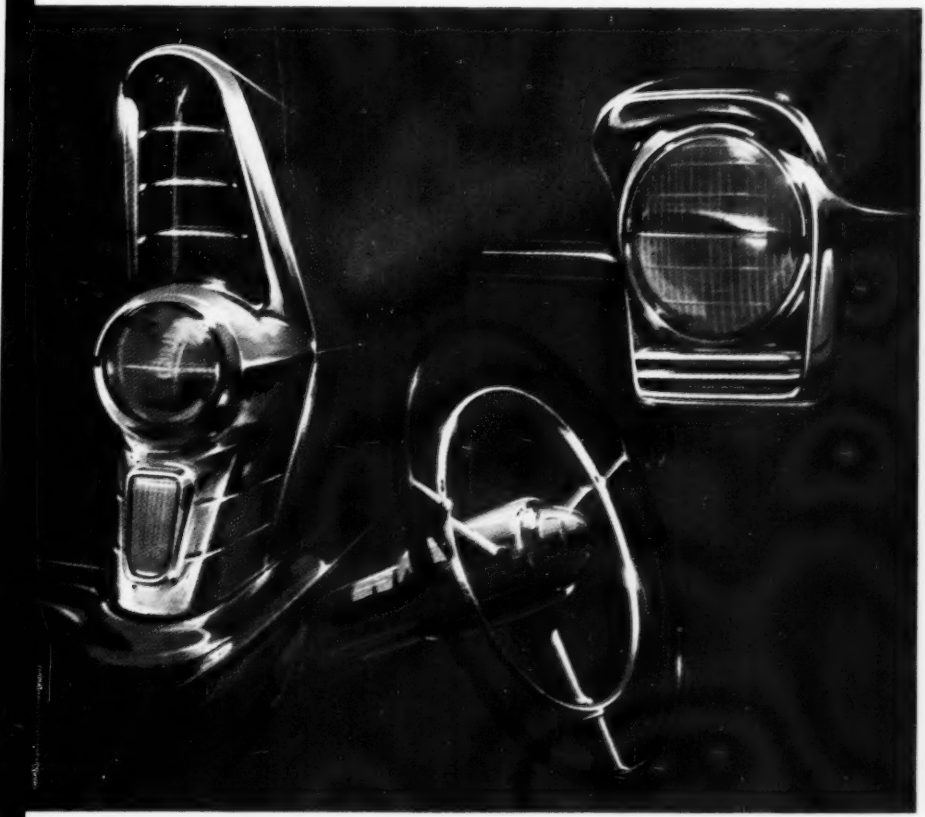
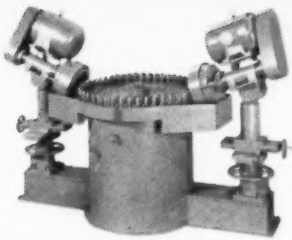
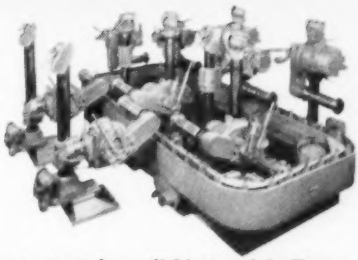




High volume can be put through this setup, for spot face grinding valve rocker arms. This Acme 36-inch continuous rotary table, with grinding wheel heads having cup wheels, can be quickly adapted to a variety of small castings.



Acme rectangular polishing and buffing machine with eight Acme heavy-duty adjustable floating head lathes equipped with 24" cartridge type spindles. Production can run several thousand pieces per hour.

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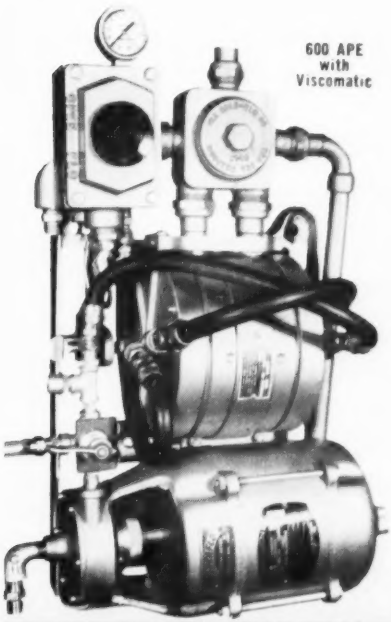

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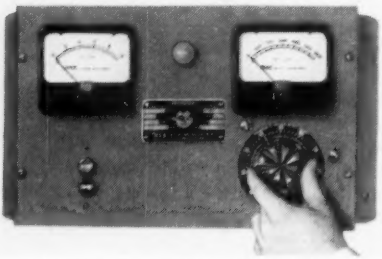

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JULY, 1957

editorial . . . . .

Competitive Metals and Finishes

Competition among the metals used in the many, varied products of American Industry is greater at the present time than has been the case for as long as many of us can remember. The same situation holds true for the various finishes applied to these metals, because in most cases several finishes can be used on any one metal to achieve different effects. Further, when one metal is replaced by another, a different finish may be specified or required.

Metals are replacing brick and stone in the architectural field. Recently, a number of buildings have been constructed with exteriors of stainless steel, or anodized aluminum in various colors. Porcelain enamel on steel, proved over the years in thousands of automobile service stations and the ill-fated Lustron Home, is now being used for office and school building exteriors. Porcelain enamel can be applied to steel, aluminized steel, and aluminum. Copper and copper alloys are also being used for building exteriors.

Today's automobile uses more of the light metals. Anodized and dyed aluminum panels, strips, and other parts have replaced some of the copper-nickel-chromium plated die castings used previously. This trend, accelerated by the nickel shortage that has plagued the industry since the Korean War, has had the result of creating more colorful automobiles, and of giving the designers another type of finish to use in expressing their creative ability.

In the appliance industry, the competition in both metals and finishes has been keen. Although improved paint coatings have been adopted as replacements for porcelain enamel in some applications, and anodized aluminum parts have replaced porcelain enameled steel parts in some cases, it is worthy of note that the appliance industry still uses all types of finishes currently available. These include electroplates, paint, anodized aluminum, porcelain enamel, plastisols, galvanizing, tinning, vacuum metalizing.

In the battle of the metals and finishes, it is well to remember that the interests of the ultimate consumer are being served—he is getting improved products with better, more colorful, more appealing finishes than were previously available. Further, even though one metal or one finish may be replaced by another, the products being manufactured still require attractive and durable finishes.

The finishing industry must remain flexible to adapt itself to and take advantage of the changes as they are made.

Ezra A. Blount

—EDITOR

How to Select and Use Contact Wheels

A practical discussion of contact wheels for abrasive belt polishing: what to consider in choosing the best wheel for a specific application; proper techniques to achieve efficient, economical operation; how to correct difficulties.

By **WARREN K. SEWARD**
Machine & Methods Development Engineer
Coated Abrasives Division
The Carborundum Company
Niagara Falls, New York

The selection of the proper contact wheels for grinding and polishing with coated abrasive belts is very important. Next to the belt itself the contact wheel is the most important component in a belt set-up. Simply selecting any contact wheel for the job and using that wheel regardless of the results, or the costs of the operation, is obviously poor economy. A contact wheel should be selected after consideration of all the factors involved; and a complete and detailed record of its performance should be kept for subsequent reference. Through trials and test procedures with this wheel—and variations of it, it is possible to investigate all of the variables involved (speeds, feeds, pressures, lubricants, and so on). In this manner the best operating conditions and the proper balance between wheel and belt to produce the most efficient and economical operation can be determined objectively.

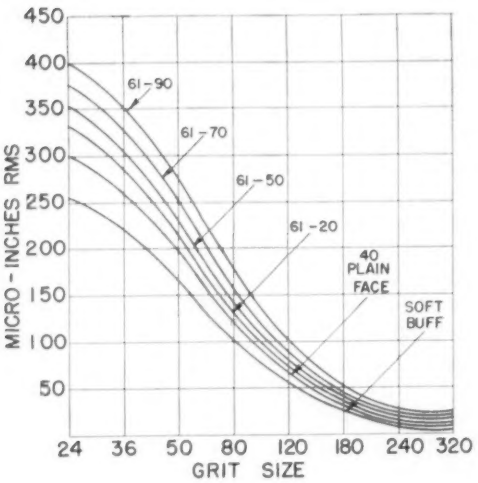


Fig. 1—Metal: low-carbon steel; speed: 7,000 s.f.p.m.; lubricant: none; abrasive: resin industrial cloth — Aloxite.

Definitions

Certain names and terms are applied to contact wheels and rolls to describe characteristics found in wheels of different types. These terms are common to the trade and do not necessarily follow the strict dictionary meanings.

Aggressive. As applied to contact wheels, this means a wheel which imparts a harsh or sharp cutting action to the belt. It also implies that the wheel, by virtue of its face, shape, pattern and/or hardness, increases applied unit pressure sufficiently to cause a controlled breakdown of the abrasive particles, thereby producing a more uniform rate of cut.

Hardness. This indicates the density of the wheel or the relative resistance of the wheel to deformation when pressure is applied to the workpiece. With rubber-covered wheels the measurement of hardness is invariably given in durometer units. Two durometer scales are used: the "A" and "D" scales. The "A" scale is the more common, since it is used for measuring the softer types of rubber. For illustration, 50A is approximately the hardness of automobile tires; 85D is approximately the hardness of a bowling ball.

Cushion. This denotes the radial depth of the face covering of the wheel. Depth of cushion governs, to a large degree, the resiliency which can be obtained from a wheel of a given hardness.

Serrations. These are regular grooves cut, or otherwise imposed, on the working face of the wheel. Serrations on a wheel largely determine the rate of cut and uniformity of finish produced by a belt during its useful life. Serrations may be cut axially, helically, circumferentially, or a combination of these may be used to different depths and widths, depending on operating conditions and work to be performed.

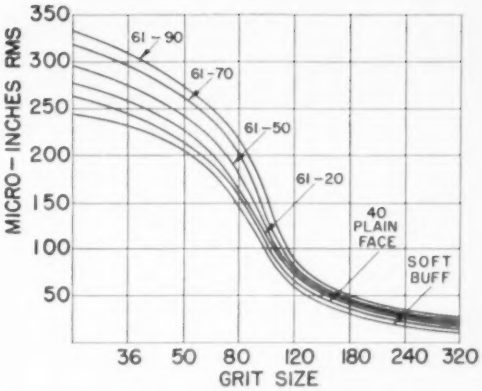


Fig. 2 — Metal: 24-ST aluminum; speed: 7,000 s.f.p.m.; lubricant: F-26 grease; abrasive: abrasive cloth, glue-bond SIC.

Dual Density. As the name implies, this term refers to a wheel composed of two different materials or two different hardnesses. These may be made either as a radial difference in density or a circumferential difference made up of alternating hard and soft ribs around the periphery of the wheel. Dual-density wheels are usually used for specialized applications.

Contact-Wheel Types

The types and styles of contact wheels are endless and continually changing. You can obtain various types, including steel, aluminum, rubber, felt, fiber, canvas, muslin, wood; hollow rubber wheels which can be inflated to any desired hardness, within limits; and combinations of these materials. However, there are seven basic types in general use today. They are the serrated rubber wheel; the X-serrated rubber wheel; the serrated rubber wheel with circumferential slits for maximum flexibility; plain or

Table I

Type of Contact Wheel	Purpose for Which Wheel Was Designed	Advantage of Wheel	Application
Rubber, Dual Density 90 "A" through 90 "D" Durometer base. 40-70 "A" Durometer fill.	Snagging and heavy stock removal.	Aggressive cut with little danger of damaging belt by use of heavy pressure.	Snagging gates, risers, and parting lines from castings and forgings. Heavy stock removal on straight-line operations.
Rubber, Serrated face. 20-100 "A" Durometer.	Stock removal. Rough grinding. Intermediate polishing.	Aggressive cut without use of heavy pressure. Usually produces best belt life on average work.	Roughing or cutting down operations on all types of metal. Excellent belt life for intermediate polishing.
Rubber, X-Serrated face. 20-100 "A" Durometer.	Stock removal. Rough grinding. Intermediate polishing.	Usually produces a more aggressive cut than wheel above for same applied pressure. Best for mechanized operations.	Roughing or cutting down operations on all types of metal. Excellent belt life for intermediate polishing.
Rubber, Serrated face plus circumferential slits equally spaced 20-50 "A" Durometer.	Maximum flexibility for a given hardness.	Segments of serrations do not break out of edge of wheel as they do with axial and X-type secondary serrations on some applications.	Polishing and blending contoured parts on all types of metal. Produces good belt life.
Rubber, Serrated face with solid edges 20-90 "A" Durometer	Minimize edge wear on wheel when grinding or polishing next to a shoulder, boss or flange.	Good wheel life when grinding or polishing next to a shoulder, boss or flange, without sacrificing belt life and cut.	Sharpening scissors and shears, polishing forgings and castings, polishing work having fillets, etc.
Rubber, plain face	Final finishing and oiling out.	Good wheel life. Produces fine finishes for easy buffing with good to fair belt life.	Final finishing and oiling out all types of metals.
Compressed canvas in seven densities from "very hard" to "Supersoft."	Used for all types of polishing. The harder densities are used for some snagging work. Less aggressive than rubber.	Excellent wheel life. Good wheel to shape for contour polishing on "three-wheel-type" setups.	Final finishing and oiling out all types of metals. Hard grades used for some snagging.

Table I—(Continued)

Type of Contact Wheel	Purpose for Which Wheel Was Designed	Advantage of Wheel	Application
Solid-buff type in three densities: extra soft, soft and medium.	Made up in standard wheel widths. Construction prevents streaking work.	Uniform density produces uniform finish. Low cost.	Final finishing and oiling out all types of metals. Very good for blending.
Sectional buff, ruffled or sewed in soft density.	Any width wheel may be made up by adding sections.	Low cost.	Final finishing and oiling out all types of metals. May streak work when contoured.
Sectional buff, finger type, soft density.	Provides maximum wheel flexibility.	Low cost. Maximum wheel flexibility for polishing contoured parts.	Final finishing and oiling out. Good for blending.

smooth-faced rubber wheels; canvas wheels; and buff wheels, solid and sectional. Descriptions of and applications for these wheels and two special-purpose wheels are given in Table I.

Abrasive-Bond Type Can Govern Wheel Selection

The tougher the work conditions, the tougher the bond should be. The surface sharpness of the abrasive coating does the cutting. The strength of the bond holds the cutting particles in working position with differing degrees of success. Resin over resin excels resin over glue, which in turn exceeds glue over glue, being particularly effective in that order as the work surface shifts from very rough to rough to moderate. Glue over glue still excels on most mild applications and where excellence of finish is most important.

Wheel Design

The design of contact wheels is dependent on the parts to be surfaced or ground. In the simplest analogy, its facial design variations and hardness are to a belt what grinding wheel structure and hardness are to a grinding wheel. The contact wheel design should retard glazing of the abrasive coating without overdoing the job. The rougher the surface of the workpieces, the stronger the bond of the belt, and the milder the action desired of the contact wheel. The smoother the surface of the workpiece, the more aggressive the action desired of the contact wheel; the more radical the

". . . a ratio of land width to groove width of one to three is suitable for general work on most types of material."

contact-wheel design, the tougher the bond required in the belt; the more conservative the contact wheel design, the weaker the bond can be on the belt for optimum results.

Contact-wheel design revolves around the facial characteristics. Serrations and lands of different widths, and at different angles to the side of the wheel, give different results. The larger the area of the lands in relation to the area of the grooves the larger the belt area in contact with the work, and the smaller the unit pressure. Conversely, as the total area of the lands diminishes the belt area in contact with the work becomes smaller, and the unit pressure is increased.

A plain-face contact wheel has no serrations. It assures the maximum belt area in contact with the work, and therefore, the lowest unit pressure. Thus, it is plain that, while contact-wheel design has a great deal to do with abrasive costs on belt operations, it can be overdone. Still stronger belt bonds will, however, require more aggressive contact wheel design for optimum results.

Size of Serrations for Average Work

Experience has shown that a ratio of land width to groove width of one to three is suitable for general work on most types of material. On a 14-inch-diameter wheel, these measurements are 3/16-inch width of land to 9/16-inch width of groove. There are 40 such serrations cut at a 45 degree angle to the side of the wheel. As the wheel sizes become smaller, the width of land and groove, as well as number of serrations, diminish proportionately while the ratio remains the same. The angle of 45 degrees is

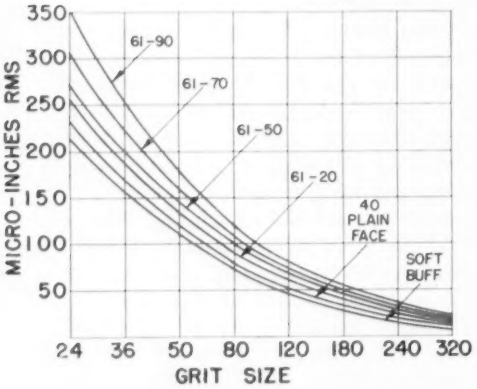


Fig. 3 — Metal: low-carbon steel; speed: 7,000 s.f.p.m.; lubricant: F-26 grease; abrasive: resin industrial cloth — Aloxite.

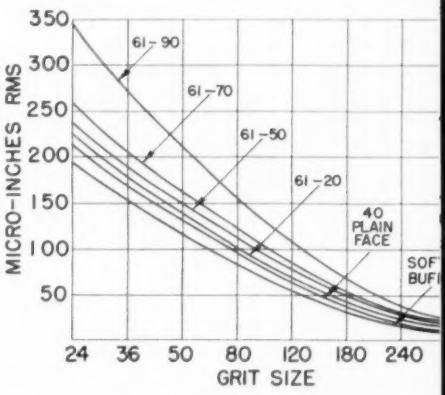


Fig. 4 — Metal being polished: low-carbon steel; lubricant used: none; abrasive employed: industrial cloth—glue-bond—Aloxite.

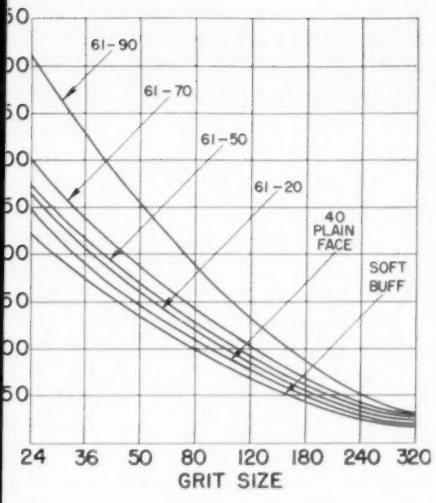


Fig. 5 — Metal: 24-ST aluminum; speed: 7,000 s.f.p.m.; lubricant: F-26 grease; abrasive: resin industrial cloth — Aloxite.

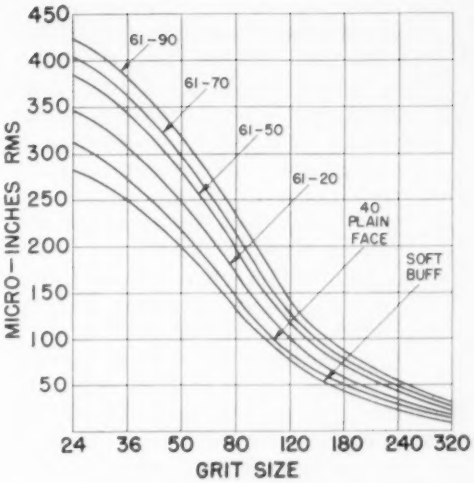


Fig. 6 — Metal: 24-ST aluminum; speed: 7,000 s.f.p.m.; lubricant: F-26 grease; abrasive: industrial cloth, glue-bond—Aloxite.

selected because it produces an aggressive cutting action without an undue "siren" effect from the grooves. A serration angle of 90 degrees (at right angles to the side of the wheel) produces the most aggressive cut, but the whine or siren effect is intolerable.

As the serration angle is decreased or brought closer to the side of the wheel, the aggressiveness diminishes, while a finer finish is produced, all other conditions remaining constant.

Purpose of Serrations

Stock cannot be removed from the workpiece unless the abrasive particles can penetrate the material and actually remove it in the form of chips. A finish can be improved without stock removal by burnishing — which is displacing or leveling an irregular surface. Since penetration of the abrasive particle into the workpiece is necessary to remove stock, it is necessary to exert force on the abrasive to obtain penetration. The use of serrations on the face of a contact wheel provides an easy means of obtaining sufficient unit pressure on the abrasive particles to give controlled breakdown of these particles and prevent them from glazing. This is known as the "pressure per grit."

As an example, consider the 14-inch wheel cited previously, with the specified serrations being used to grind the end of a 1-inch-square bar. With 3/16-inch lands and 9/16-inch grooves, there are three parts groove to one part of land, or only one quarter square inch of wheel in contact with one square inch of bar. If 10 pounds of grinding force is applied to the bar, the applied pressure is 10 pounds per square inch. The wheel (and belt) must resist this pressure, and since there is only one quarter square

inch of wheel (and supported belt) in contact with the bar, the effective unit pressure is $10 \div \frac{1}{4}$ or 40 pounds per square inch exerted on the belt in contact with the bar.

In addition to multiplying the applied pressure, serrations also provide a controlled flexing of the belt between adjacent serrations, which prevents the chips from being wedged between adjacent grits to produce "loading" of the belt.

Increasing or decreasing the size of the serrations will affect the results obtained, as will (to a lesser degree) changing the number of serrations, assuming that the hardness is correct for the work.

How to Determine the Proper Ratio of Land to Groove

There is a useful method for determining the most efficient ratio of land to groove in a serrated contact

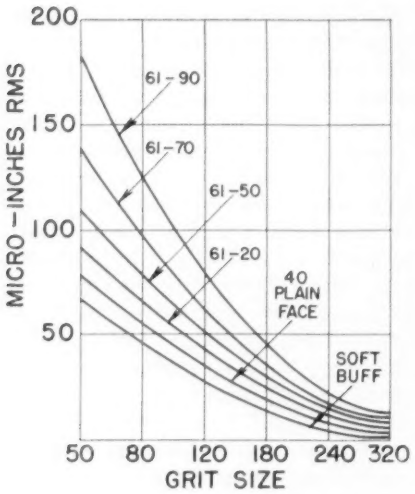


Fig. 7—Metal: 18-8 stainless steel; speed: 7,000 s.f.p.m.; lubricant: F-26 grease; abrasive: industrial cloth—glue-bond Aloxite.

"Most contact wheels are in good balance when received from the manufacturer."

wheel for a given application. A 61 type wheel, having an initial ratio of approximately one part land to six parts groove is used. A complete study of belt life, production rate, and finish (if important) is kept for the wheel in this condition. After this test the wheel is reduced in diameter sufficiently to change the ratio from one to six to approximately one to five. The next reduction should be one to four, one to three, and so on. Reviewing the data compiled from such a test will show clearly the land to groove ratio best suited for the application and operating conditions. It is then a simple matter to order subsequent wheels with the specified land to groove ratio.

Dressing or Truing Contact Wheels

Most contact wheels are in good balance when received from the manufacturer. However, because there are slight variations in density within a wheel, all wheels do not run absolutely true. When a wheel does not run true it is usually because the wheel is being operated at a speed above or below that at which it was dressed by the manufacturer (assuming that the machine spindle is not bent or undersize, and that the bearings are in good condition). Holding a piece of chalk or crayon lightly against the wheel while running at operating speed will indicate its truth in round. If it is found that the chalk does not leave a mark all the way

"Wherever possible, the contact wheel should be the power wheel."

around the circumference and across the face width, the wheel should be dressed true on the machine spindle. To do this, wrap a new piece of abrasive (50-120 grit) around a flat board and hold it lightly in contact with the rotating wheel. Pressure applied should be light, otherwise the out-of-round condition may be further aggravated rather than corrected.

Power Requirements

For general work, power requirements per inch of belt width vary from ½ to 2½ h.p. The lower figure is used only on very light work, such as deburring, and usually on the slack-of-belt. Average polishing work with medium and fine grit belts usually requires 1 to 1½ h.p. per inch of width. Heavy grinding, where stock removal is required, with coarse-grit belts, uses 1½ to 2½ h.p. per inch of width.

Use Contact Wheel for Power

Wherever possible, the contact wheel should be the power wheel. Otherwise, the abrasive belt is used as a power-transmitting belt. When so used, the belt life is shortened because additional strain or stretch is placed on the bond. This weakens it at the same time that it is performing its grinding or polishing function.

Operating Speeds

It is the efficiency and economy of the abrasive belt, not the safety of the contact wheel, which governs operating speeds.

In general, it has been found, by

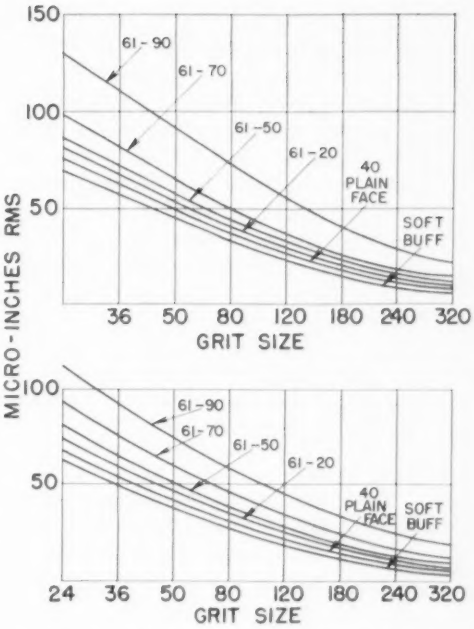


Fig. 8—Metal: high-carbon steel—60 Rockwell C.; speed: 7,000 s.f.p.m.; lubricant: none; abrasive: resin industrial cloth (Aloxite)

laboratory and field tests, that glue and glue-modified belts cut the fastest and last the longest when operated at speeds between 3,500 and 5,500 s.f.p.m. Resin and modified resin belts perform best at speed ranges of 4,000 to 6,000 s.f.p.m. There are exceptions, of course. If, for example, maximum flexibility of wheel and belt are necessary for contour polishing, a maximum speed of approximately 5,500 s.f.p.m. is indicated, regardless of the type of abrasive used. Operating a soft wheel at high speeds makes it act much harder.

Contact Wheels Are Safe

Most conventional grinding wheels have a maximum safe op-

"Belt tension plays an important role in the success of a belt setup."

erating speed. When this speed is exceeded, dangerous operating conditions may exist. Most types of contact wheels also have maximum safe operating speeds, but they are usually far beyond the efficient operating range of the belts running over them. The efficient operating range for belts is 3,000 to 7,000 s.f.p.m., yet some types of rubber-covered contact wheels have been speed tested in excess of 25,000 s.f.p.m. without damage.

Belt Tension

Belt tension plays an important role in the success of a belt setup. Actual tension on a belt can range from a low of 4-5 pounds per inch of belt width to a high of 30-40 pounds per inch of belt width. In order to obtain maximum flexibility and resilience for contour polishing, when using soft contact wheels at reduced speed, low belt tension is necessary. In such circumstances it is best to use the least tension possible so that the belt doesn't "walk" sideways on the contact wheel when the work is applied. For this type of work and set up it is important that the idler be floor mounted, so that the belt has 100 degrees or more of uninterrupted wrap around the wheel before it contacts the workpiece.

On the other hand, where hard contact wheels are used, with heavy pressure applied on the workpiece, it is imperative that greater belt tension be used, particularly where the area of contact is small. Unless the contact wheel is made of steel or other metal, it will be deformed at the point of contact. When high pressure is applied to the work, the wheel deforms, causing the belt to deform to the same or even greater extent. On the conventional backstand setup, where the contact wheel is the power wheel, the work is usually applied below the centerline of the wheel. This leaves less wrap about the wheel below the work than above it and consequently, less chance for slippage of the belt above the work. The application of high work pressure without increased belt tension deforms the wheel and belt at the point of contact and causes the belt to loop or pucker immediately ahead of the point of contact. This condition imposes a severe reverse flexing action

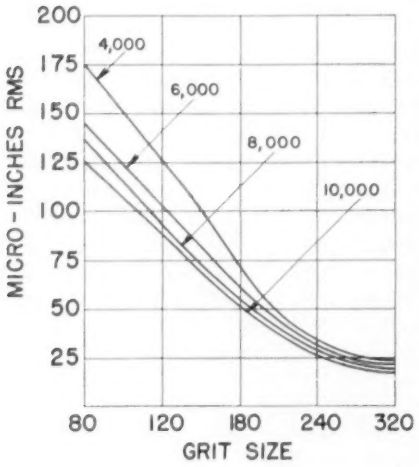


Fig. 9—Speed vs. finish. Metal: low-carbon steel; wheel: 14 by 4 inches; lubricant: none; abrasive: resin industrial cloth — Aloxite.

on the belt. This weakens the bond drastically. It also causes shelling or stripping of the abrasive grain from the backing.

General Facts

Following are some statements which hold true for most grinding and polishing applications using abrasive belts and contact wheels:

1. The harder the wheel the faster the cut and the coarser the finish for a given grit size.
2. The smaller the wheel diameter, the faster the cut and the coarser the finish. Belt life is usually reduced by using smaller wheels.
3. The higher the speed (beyond accepted ranges) the slower the cut and the finer the finish—with usually longer belt life. This is true for medium to hard wheels.
4. For soft wheels, the higher the speed the faster the cut and the coarser the finish because the soft wheels act much harder at high speeds.
5. On serrated wheels, as the area of the lands in relation to the area of the grooves is decreased, the wheel cuts faster and produces a coarser finish.
6. Proper lubricants invariably produce finer finishes and longer belt life.
7. Serrated wheels retard glazing and give longer belt life than smooth-faced wheels.
8. Hard wheels remove more stock than soft wheels, if grit size remains constant.

Contact Wheel Selector

Table II shows various conditions and results obtained with contact wheels and belts and steps or changes that will help to improve

Table II

CONTACT WHEEL SELECTION

Result Obtained	Suggested Changes									
	Softer Density	Harder Density	Narrower Lands (Wider Grooves)	Wider Lands (Narrower Grooves)	Higher Speed	Lower Speed	Change Lubricant	Deeper Grooves	True Wheel	Use Coarser Grit
Belt Glazed		X	X				X			
Belt Loaded	X		X				X	X		
Too slow cutting		X	X			X	X			X
Finish too coarse				X	X		X			
Burning			X			X	X			X
Too hard for contour	X		X			X		X		
Chatter	X		X					X	X	
Shedding Grain		X		X		X	X		X	
Overlap Marks	X		X							
Dubs Edges		X								

"Always use the least flexible belt that will perform a satisfactory job."

or correct these conditions. All of the suggested changes checked under the different columns may not be necessary and some may not be desirable, under some circumstances, to improve the results. These changes are recommended with the assumption that the machine is in good condition.

Grit Size, Finish, and Type and Hardness of Wheel

Figures 1 to 8 are graphs which illustrate the effect of contact wheel type and hardness on finish, using different grit sizes and various materials. Both glue and resin bond belts were used to show the difference in finish produced by a soft and hard bond. It is interesting to note the difference in the shape of the curves for aluminum.

For all graphs, flat stock was used and pressure was applied by hand. New belts, which had been broken-in sufficiently to remove initial sharpness, were used in all cases. Contact wheels used were all 14 inches in diameter.

Speed Versus Finish

Figure 9 shows the effect on finish produced by various speeds. It was stated previously that for medium-to-hard-density wheels, increasing speed slows the cut, produces a finer finish, and increases belt life. However, on average grinding and polishing applications with belts, it has been found that a speed of 5,000 to 6,000 s.f.p.m. gives the best overall results. This speed range gives a good rate of cut while maintaining good belt life and producing the greatest amount of stock removal or pieces finished per belt.

Belt Life Versus Type and Hardness of Wheel

The data in Table III shows the results obtained on 1015T descaled flat bumper bar steel, using several different contact wheels. All wheels were 14 inches in diameter and were run at 7,350 s.f.p.m. Belts used were paper, 4 inches by 168 inches, 80 Alo ECM (Glue Bond Aloxite) with no lubricant.

Tips on Contact Wheel Usage

In polishing parts that require a sequence of two or more grit sizes to produce the required finish, best belt life and highest production rate can be obtained by using the hardest contact wheel that will satisfactorily perform the work for the roughing and intermediate operations. Blending and final finishing is then done with a softer wheel.

On polishing work where only one grit size is used, greatest economy can sometimes be effected by using two different contact wheels. An example of this would be to use a buff or smooth-face rubber wheel when the belts are new and cut freely. When the cut slows down sufficiently on these wheels, the same belt is then used on a serrated wheel to obtain additional life. It should be noted that when the glazed belt is used on the serrated wheel, the rate of cut increases almost immediately.

When polishing large flat surfaces on a backstand or swing frame grinder, it is often difficult to elimi-

nate overlap marks on the work. This condition can be improved by lightly rounding off the edges of the contact wheel and stoning or dulling the edges of the belt to prevent gouging.

Always use the least flexible belt that will perform a satisfactory job. Mechanical flexing of the abrasive for softness materially reduces the bond strength and causes the abrasive particles to pull out sooner than similar material which has had a minimum of flexing.

The type of belt splice or joint can sometimes make a substantial difference in belt life and smoothness of operation. It is suggested that the abrasive manufacturer's representative be consulted for advice on a suitable type of splice.

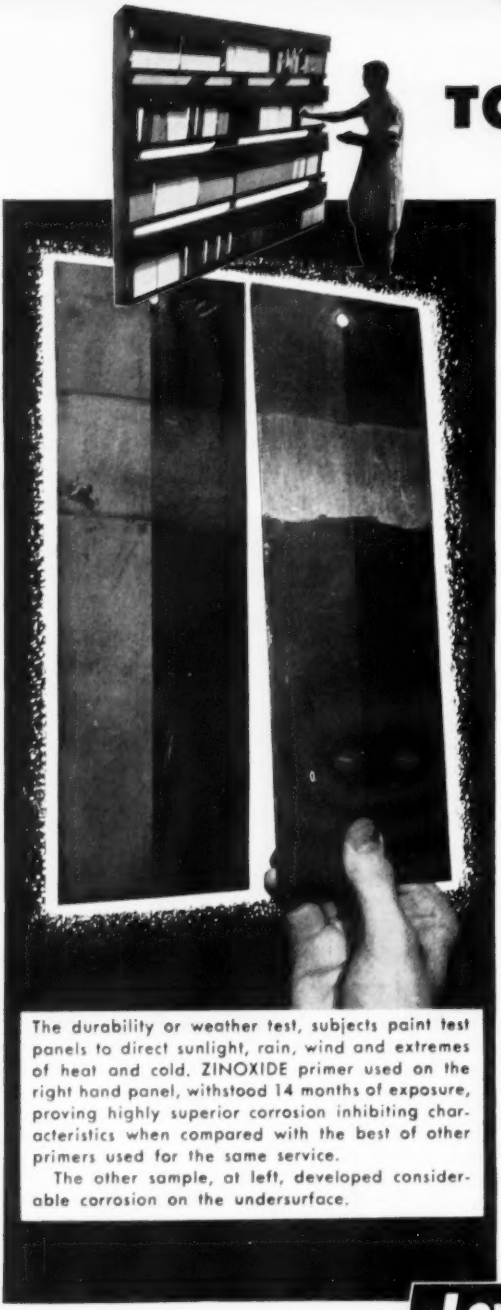
Storage and Protection of Contact Wheels

Regardless of size or type, contact wheels should be properly stored to prevent damage when not in use—or actually on the machine spindle. On many hand operations where two or more types of wheels are used on one spindle, it is common practice to lean the wheels not being used against the machine, so that the minimum amount of time is lost in making changes. A wheel left standing, for an extended period (even a weekend), on its edge, may take a permanent "set." This produces an out-of-round and out-of-balance condition that can mark the work, shorten the belt life, and cause excessive fatigue in the operator. When not in use, wheels should be laid flat on their sides, or even better, should be hung on pegs at convenient locations.

Table III

BELT LIFE VS. TYPE AND HARDNESS OF CONTACT WHEEL

Type of Contact Wheel	Total grams removed before burning resulted	Total time belt used (Min.)	Rate of stock removal in grams per minute							
			1 Min.	4 Min.	12 Min.	24 Min.	30 Min.	40 Min.	60 Min.	80 Min.
Soft Buff	554	16	52	45	23					
50 Duro Plain Face	724	16	90	66	34					
50 Duro ½" Land—⅜" Grooves	1030	24	75	66	42	17				
70 Duro ½" Land—⅜" Grooves	1246	30	80	65	47	24	22			
61-20 3/32" Land—21/32" Grooves	1406	38	59	64	51	29	27			
61-40 3/16" Land—9/16" Grooves	1686	44	66	50	51	33	32	21		
61-70 3/16" Land—9/16" Grooves	3221	80	75	66	53	48	50	40	31	25



The durability or weather test, subjects paint test panels to direct sunlight, rain, wind and extremes of heat and cold. ZINOXIDE primer used on the right hand panel, withstood 14 months of exposure, proving highly superior corrosion inhibiting characteristics when compared with the best of other primers used for the same service.

The other sample, at left, developed considerable corrosion on the undersurface.

TORTURE RACK for finishes

...helps improve industrial primers

The old saying, "proof of the pudding is in the eating" describes the durability tests employed at Lowe Brothers. Conditions closely duplicating those in actual service are a vital part of testing all new finishes as well as the continual improvement of existing products.

A recent product development program carried out by our Technical Department is a good example.

Extensive tests were made on many types of pigment materials to develop a superior industrial primer. The result—ZINOXIDE—a primer with highly superior corrosion inhibiting properties ideal for the surface protection of forgings, castings and sheet steel products.

For the best industrial finishes, call or write Lowe Brothers, 424 East Third Street, Dayton 2, Ohio

LOWE BROTHERS

INDUSTRIAL FINISH

also Style-Tested paints for the home

Continuous Automatic Line Turns Out Seamless, Printed Aluminum Cans

New process recently developed by Aluminium Ltd. starts with a slug of aluminum and turns out an extruded aluminum can that's lacquered inside and decorated outside, baked and ready to be used . . .

LACQUERING AND DECORATIVE PRINTING operations are integrated into a continuous processing line that is turning out the world's first seamless rigid aluminum cans in production quantities. The new line is the product of several years of research and development by Aluminium Limited, a large Canadian aluminum producing company. It is in operation at the company's German subsidiary, Aluminiumwerke Goettingen G.m.b.H., Goettingen, Germany.

E. G. MacDowell, Aluminium Limited director and vice president in charge of sales, said in a statement announcing the successful operation of the process, that the innovation is expected to be "of great significance to the packaging industry in the United States and elsewhere . . ."

The process by which the cans are made is an impact extrusion operation in which slugs resembling silver dollars are fed into a die in a press and struck a sharp blow with a punch, causing the malleable aluminum to "squirt" out over the punch and form a seamless can body. The continuous processing line turns the slugs into finished, decorated cans. The line consists of five units: (1) a press to make the can body; (2) equipment to trim

←———For more data on advertisement on opposite page circle 323 on Reader Service Card

the can to length, flange and bead it, modify the base if it is a pressure container; (3) a cleaning machine and drying oven; (4) internal lacquering equipment and baking oven; and (5) coating and offset printing machines and baking oven.

Fig. 1—An assortment of cans turned out on Aluminium Limited's "AC" Line. Line produces cans ranging from from two to three inches in diameter and two to six inches in height.

One of the interesting features of the installation is the method by which cans are transported between operations. The system employs pneumatic tubes between units, through which cans are either blown by compressed air or sucked by a partial vacuum. This special automatic feed equipment was developed by Winkler Fallert, of Berne, Switzerland.

Finishing Aluminum Cans

After the cans have been fabricated as outlined above, they are transferred in batches of four to the pegs of a washing machine conveyor. This unit is linked to the previous machinery by four P.V.C. plastic tubes approximately 3 inches in diameter.

Process oil is removed from the

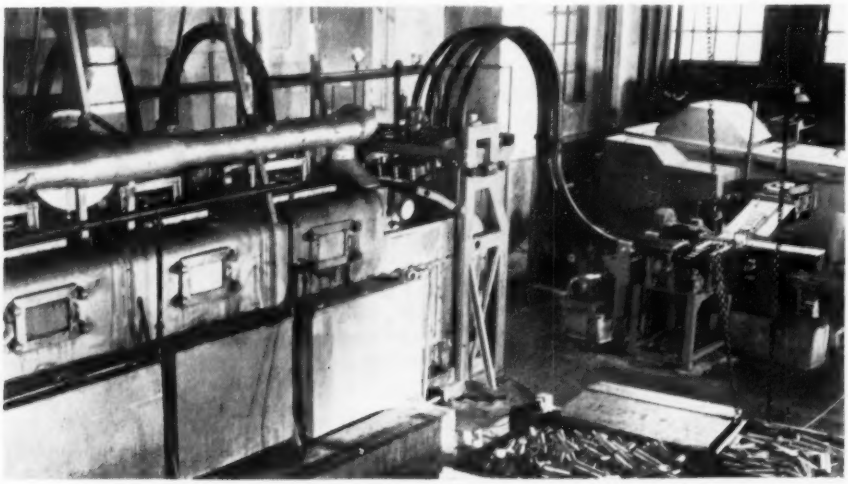


Fig. 2—Horizontal extrusion press (far right) makes can bodies. Cans then pass through machine (in front of extrusion press) for trimming, flanging and forming of can base. Pneumatic tubes carry cans from trimming operation to degreasing machine (left).

exteriors and interiors of the cans by a three-stage process. In the first stage a hot alkaline cleaner is sprayed on all surfaces of the can by jet boxes above and below the conveyor. The sprays are arranged so as to produce a slight downward pressure, thus keeping the cans on the pegs of the conveyor. In the second zone the cans are washed with continuously running cold water. The third operation is a hot water rinse which removes remaining traces of cleaning solution from the cans and at the same time preheats them for the drying operation. While still on the conveyor pegs, the cans are blown dry by hot air.

After emerging from the drying zone of the cleaning machine, the cans pass beneath pneumatic tubes, which suck up the cans, base uppermost, and transport them toward the next operation. The cans are ejected by an automatic air lock onto a stainless steel conveyor, base downward. From this vacuum-feed unit, the cans pass along the stainless steel conveyor in four rows and enter either the spray lacquering machine or the bypass conveyor, according to the type of can.

Spray Lacquering

The spray lacquering machine was designed by Aluminium Laboratories, Ltd., and built by Aluminiumwerke Goettingen, since no standard machines were found suitable for this process. The cans pass along four conveyor belts and are fed, in fours, into the machine. Each can is clamped between a driven rubber-covered roller and two idlers. The driven rollers cause the cans to rotate and four vertically mounted spray guns descend into the cans and withdraw, spraying at the same time. The cans are brought to rest and released on steel belts. These belts carry the cans to an inclined vibrating table, where they are sub-divided into eight rows and fed to the baking oven.

Baking Oven

The oven has a chain link conveyor and is heated by air circulated through a heat exchanger. Each can remains in the oven for 10 minutes. The lacquering solvents are evaporated and the can is raised to the temperature required for baking the lacquer during this time.

Cooling of the Cans

After baking, the cans must be cooled before printing. Considerable economies in space have been achieved by transferring the cans while they are still hot. The initial

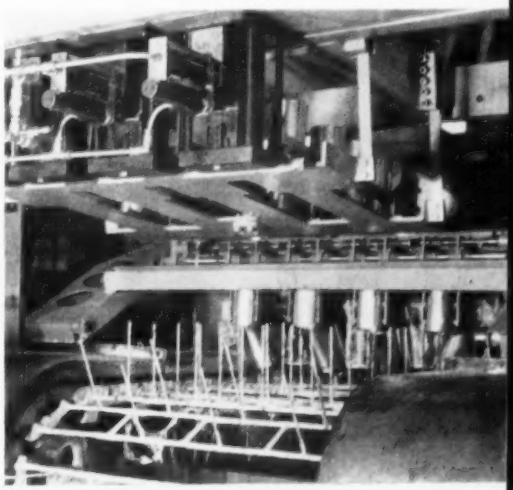


Fig. 3—Closeup of cans as they pass from pneumatic tubes onto spindles that will carry them through the degreasing machine.

". . . principles of automatic handling have been established, which can be applied to faster production of cans . . ."

part of the vacuum transfer tubes is made of stainless steel, coupled, after a short distance, to P.V.C. tubes. Eight tubes are used and each is fitted with an air lock which discharges the cans on to a wide steel conveyor, where the cans cool. At the end of this conveyor the cans move to a narrower high-speed conveyor in single line, from which they are fed to the automatic base coating and printing unit.

Automatic Base Coating

The printing machinery and baking ovens are of standard design but the machines are equipped with automatic feed and take-off mechanisms synchronized with the printing machines. This mechanism consists of four sets of gripper arms which, in each cycle, remove cans from the incoming conveyor and printing mandrel and load cans on the outgoing conveyor and next printing mandrel.

The equipment has two baking ovens, the first for partial drying of the base coat, and the second for combined drying of the printing ink and final drying of the base coating. A chain conveyor passes continuously from the base coating machine, through the first drying oven, to the printing unit, and then through the second oven, returning to the take-off from the base coating machine. The cans are suspended on horizontal pegs attached to the printing-unit chain. Operation of these two units is continuous and

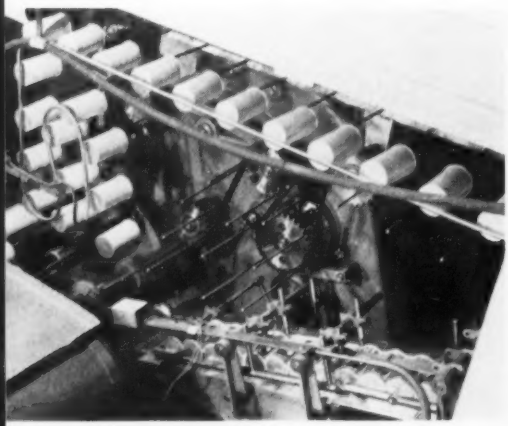


Fig. 4—After degreasing, cans pass through drying unit. They are shown here arriving at first step of printing operation, where base coat is applied. Automatic transfer unit then carries cans to a baking oven for drying.

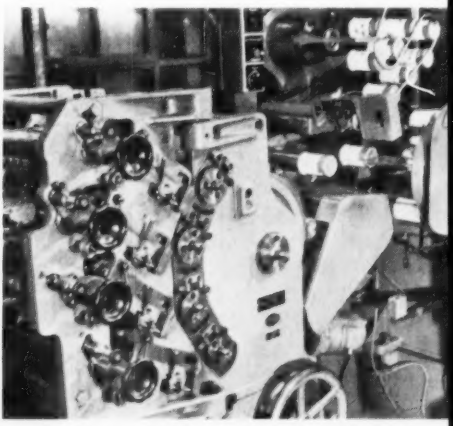


Fig. 5—Plain base-coated cans arrive at second stage of printing operation, where decoration is applied. Cans then move through final drying operation, then to packing. (Photos courtesy Aluminium Ltd., Montreal, Can.)

is synchronized with the rest of the line.

Cans which are not internally lacquered by-pass the spray lacquering machine and baking oven on two conveyors at right angles. The first short conveyor transfers them to a long single conveyor connected to the feed unit of the base-coating machine.

Conclusion

The increased use of rigid aluminum containers is undoubtedly dependent to a large extent on the development of quicker and more automatic means of processing. The work has progressed from initial laboratory experiments, designed to establish basic principles, through successive stages until a complete prototype production unit has now been built and tested.

The development of this method has resulted in the first fully automatic aluminum can body making line being put into operation, and although the present rate of output is limited to the output of one impact extrusion press, the basic principles of automatic handling have been established, which can be applied to faster production of cans of this type. There is no reason why these principles cannot be adopted and with only slight modification applied to production at a rate several times greater. In fact some operations of the line have already been tested and operated at more than double the present speed.

★ ★ ★ ★ ★

A dual hot-dip coating machine developed at the Reynolds Wire Division of National-Standard Company almost doubles the rate at which wire cloth can be coated with lead or zinc.

Key to the machine's increased productivity is an arrangement of one roller above the other, which permits wire cloth up to 60 inches wide to be moved through successive baths of sodium hydroxide and muriatic acid, two cold water rinses and a flux pan before passing through a tank of molten metal. After the coating solidifies, an accumulator winds it up in rolls preparatory to shipment.

The dual unit can coat approximately one and one-half million square feet of wire cloth per month.

★ ★ ★

The average tin content of hot-dipped tin plate increased from 24.1 pounds per short ton in 1953 to 26.6 in 1954; in electrolytic tin plate, from 9.8 pounds per short ton to 10.23. These figures indicate a trend toward thicker tin coatings on cans, according to the Malayan Tin Bureau, Washington, D. C.

One of the largest uses of nickel plating is in the decorative field, where, in combination with a thin coat of chromium, its resistance to corrosion and wear gives a permanent, lustrous metallic finish. Nickel plating is also employed extensively for electroforming, particularly in the manufacture of plastic dies, where high strength and wear-resistance are required. The corrosion-resistance and non-toxicity of nickel make it useful for plating vessels used in the food processing industry. Another important application, in which electrodeposited nickel of high hardness is utilized, is the building up of surfaces of machined parts which have either been initially over-machined or worn in service.

★ ★ ★

During 1956, International Nickel produced a record 15,500,000 tons of nickel-copper ores from its mines in the Sudbury District of Ontario.

Etching Stainless Steel by the Electrolytic Method

By W. E. McFEE
Armco Steel Corporation

Armco Steel Laboratories develop a simple electrolytic method for etching stainless steels quickly, with a minimum of equipment . . .

IN RESPONSE to the need for a fast method of etching stainless steels, Armco Research Laboratories has developed a simple, quick electrolytic etching process. The steps are as follows:

1. Prepare the surface of the work. Areas that are not to be etched are masked with a coating that will resist the etching action. Areas to be etched are left uncoated. There are various ways to do this.

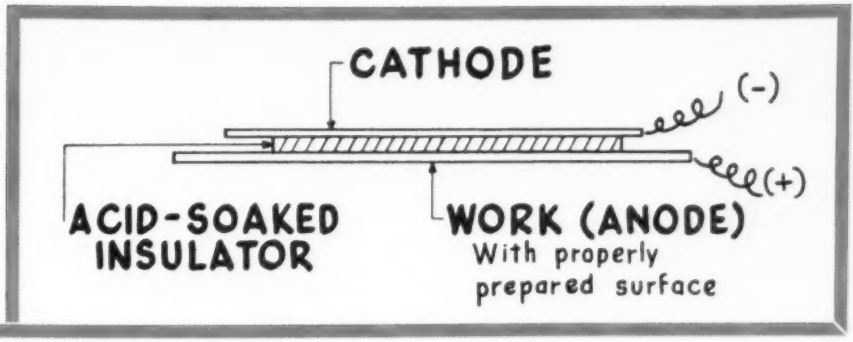
Any clear lacquer provides a good mask. The entire surface of the work may be coated with lacquer. Then the coating is cut or otherwise removed over the areas to be etched.

Where better quality work is desired, a photo-engraving system or silk screen process is generally employed.

In the photo-engraving method all of the work surface is covered with a light-sensitive coating. The coating over the areas not to be etched is hardened by exposure to light. The unhardened coating over the areas to be etched is then washed off.

With the silk screen process, a coating material is applied through a silk screen. This acts as a template, which means that the coating is applied only to those areas where etching is *not* to be done.

2. The next step is to soak an absorbent electrical non-conductor, such as blotting paper, with one of several acid electrolytes. Hydrochloric, sulfuric, nitric or phosphoric acid may be used, depending on the kind of etch wanted. Any of these acids in 12-25 per cent solutions will produce a dull, frosty etch when comparatively low current densities are applied. For a bright etch, use 50 per cent phosphoric acid with high current densities. Do not use nitric acid on absorbent paper to attain a bright etch.



3. Place the acid-soaked absorbent material over the prepared surface of the work.

4. Place a strip of any metallic conductor over the wet absorbent material.

5. Connect the work to the positive terminal of a d.c. source and the cover strip to the negative terminal. The process requires 2 to 12 volts, according to the area to be etched. Current density is quite high, but total current will also vary with area. Where the background or larger area of the work is to be left unetched the voltage and total current are low. If the background or larger area is to be etched the voltage and total current will be high.

6. Small areas should require only 5 to 30 seconds. Larger areas may take 30 seconds to several minutes, depending on the extent of the area and the depth of etch desired.

7. The current may also be a.c. Although the voltage and current is approximately the same as for d.c., the time would be about twice as great.

This procedure is inexpensive to set up and simple to operate. Treatment of small parts is quick and the process is readily adapted to high production.

Another advantage is seen in the marking of large pieces of equipment where it can be easily applied to vertical surfaces or even to overhead surfaces.

Continuous strip operation can be accomplished by dragging surface-prepared strip between two flat electrodes. Here glass cloth, asbestos paper or cloth, or a thin sponge rubber pad is used as the absorbent material to carry the acid electrolyte. Any of these materials will last longer than absorbent paper under the abrasive action caused by movement of the work. Caution: Do not use nitric acid on sponge rubber or other organic material.

★ ★ ★

Nickel-Plated Propellers

Aluminum and hollow steel airplane propellers are now being plated with nickel to give them longer life. Nickel plating was first used on seaplane propellers for greater resistance to erosion and corrosion from salt water. Later the hard nickel plating was found to provide good resistance to abrasion from gravel and other debris encountered by land-based aircraft.

finishing clinic

Suggested solutions to problems submitted by readers. Send your problem to our Editorial Staff. There is no charge.

Maintenance Painting

Question: *In your March, 1957 issue on page 35 there is an article with regard to Plating Shop Maintenance. It refers to the maintenance of paint or shop equipment.*

We have the same problem in our anodizing plant. Would you be kind enough to suggest sources, preferably local, that may give us the correct information?

R. G. B.

Answer: In our industry, the service requirements of such paints dictates that such paints should be "acid and alkali resistant." For that reason, in the 1957 edition of the PRODUCTS FINISHING DIRECTORY, we have identified products of this type under the heading "Paints, acid and alkali resistant." The companies manufacturing these products are listed on pages 121, 122 and 123 of the DIRECTORY.

★ ★ ★

Polishing Simulated Pearls

Question: *Our products, simulated pearls, are made by dipping into a mixture made of a cellulose-base lacquer and other materials.*

We then polish these pearls, by hand, with powdered bismuth oxychloride. This powder is rubbed into the pearl and then wiped off.

The pearls are then dipped into an ethyl acetate solution. The pearls are strung and separately spaced on cotton thread during the entire process. There are approximately 50 to 60 pearls on one string.

Is there a chemical in liquid form that could do this hand polishing job that is now being done with bismuth oxychloride? If so, what is it; how is it used; and from whom can it be obtained?

Do you know of any equipment that would handle the polishing job in a more mechanical way, using either a liquid or powdered polishing agent?

J. I.

Answer: With reference to your question as to a chemical or mechanical method of polishing the pearls, the best possibility may be along mechanical lines. It occurs to us that this polishing operation could be done in tumbling barrels, using the bismuth oxychloride with or without other tumbling media. We are referring you to companies who are manufacturers of barrel finishing equipment, for suggestions as to this possibility.

We are also recommending other companies who could advise you if a chemical process could be used.

★ ★ ★

Film On Electrotin Plating

Question: *We have difficulties with*

a white loose film on parts which have been tin plated and oil flowed. At the present time, hand wiping is necessary to remove this film. Any advice would be appreciated.

W. D.

Answer: It is possible that this film would be removed if the parts were dried in rotary sawdust dryers. Many times this drying operation will eliminate staining problems in cases similar to this.

If this is not successful, perhaps a similar burnishing operation, using small bits of leather rather than sawdust, might accomplish the result you desire.

Perhaps your supplier of tin plating materials and your oil supplier can suggest causes for the film and other methods of removing it.

★ ★ ★

Anodizing Racks

Question: *For some time we have been having difficulties with our anodizing racks. These racks are used to hold the aluminum products we make and anodize. I would appreciate very much any information or leads you can give me. The answers to the following questions would help to solve our problem:*

1. *Names of companies who specialize in making anodizing racks.*
2. *Names of companies or individuals who have information on anodizing rack construction, material and protective coatings.*
3. *Names of companies who have made successful use of titanium in anodizing racks.*
4. *Characteristics of titanium for use in anodizing racks. Current-carrying capacity of titanium. Contact area required for titanium contact points.*
5. *Basic rules or formula for contact area using aluminum contact points.*
6. *Names of manufacturers who make a coating for aluminum-anodizing racks (Ceramic, plastisol, adhesives, paints, etc.)*
7. *Effect of alloy composition on life of aluminum parts submerged in anodizing solutions.*
8. *Is there a harmful effect from electrolytic action between aluminum and titanium when used in the same anodizing racks?*
9. *What is the recommended procedure for production testing of anodized coating thickness?*
10. *Are color anodizing solutions harmful to plastisol coatings?*
11. *What is considered the best method for stripping anodized coatings from aluminum racks?*
12. *Are there any metals other than aluminum or titanium used to make racks?*

Our anodizing process and solutions are as follows:

Stanisol; R5 Bright dip, 210 deg. F. (80 per cent phosphoric acid, 3 per cent nitric acid, 17 per cent water); sulfuric acid, 70 deg. F. (18 per cent by weight sulfuric); dye, 150 deg. F.; 0.5 per cent nickel acetate, 170 deg. F.; cold to boiling water and intermediate rinses.

R. O. H.

Answer: We are sending you tear-sheets from the 1957 issue of the PRODUCTS FINISHING DIRECTORY listing names of companies who specialize in making racks for anodizing and plating. Also, you will note lists of companies who manufacture protective coatings for racks.

These companies can answer many of your technical questions. Actually, titanium is finding use in anodizing racks. Its current-carrying capacity compares favorably with aluminum and the anodic film is non-insulating.

We are sending you names of companies who manufacture equipment used to test the thickness of anodized coatings.

Hot spray. *Film-thickness gauge measures single coat of paint sprayed hot. Gauge reads 2.1 mils.*

Cold spray. *One coat of the same paint sprayed in conventional manner measures only .8 mils.*

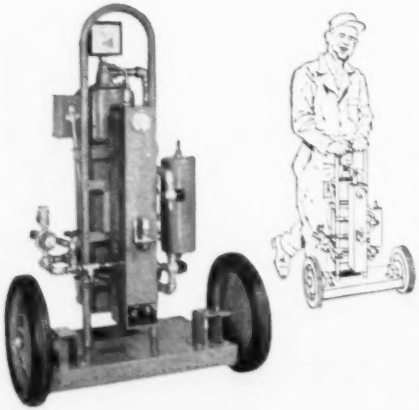
Film-thickness gauge reveals DeVilbiss hot spray puts on more paint per coat!

Each of the steel panels in the test above was sprayed with a *single coat* of black vinyl paint. But the results measured on the film-thickness gauge show one important difference – the paint on the hot-sprayed panel is nearly three times heavier than that on the one sprayed by ordinary methods.

By the controlled application of heat to the spray material, DeVilbiss hot spray gives you heavier film build . . . even with standard formulations.

What's more, materials can be applied efficiently at far lower spraying pressures, greatly reducing spray fog, and resulting in up to 50% savings in material. Finishes dry faster; shrink less; come out glossier. And because fewer passes are needed, operator fatigue is cut way down.

DeVilbiss hot spray is usable on all types of products; can be your means to better finishes at lower costs. For facts on just how much DeVilbiss hot spray can save *you*, call your nearest supplier now! Or write for Bulletin F-286.



***Hot spray goes to the job** —anywhere—with this new DeVilbiss Portable Paint Heater! Self-contained on easily moved truck, it is complete with automatic controls. Heat-jacketed hose —available in lengths up to 50 feet—keeps paint hot right up to the gun. Write for Bulletin IE-114B.*

THE DEVILBISS COMPANY
Toledo 1, Ohio

Santa Clara, Calif. • Barrie, Ontario • London, England

BRANCH OFFICES IN PRINCIPAL CITIES

FOR BETTER SERVICE, BUY
DEVILBISS

For more data circle **324** on Reader Service Card

"You sure this Chlorothene solvent is safe, Chet?"

"Sure, Jess, it's as safe as they make 'em. Of course you don't drink Chlorothene® or swim in it. You use good common sense in handling any solvent."

"Tell me more. Will it catch fire?"

"No, unlike petroleum solvents, it has no flash or fire point. We use a lot of Chlorothene for cold cleaning, wiping and dipping because it's the safest solvent we can buy."

"Is the toxic hazard from breathing vapors very high?"

"It's one of the safest. Has an M.A.C. rating of 500 ppm. In fact, our Safety Engineer recommended it."

"Guess that takes care of the safety angle."

"Yes, and Chlorothene really takes care of the cleaning angle, too. It's high in solvent power and evaporates fast."

"Say, Chet, did you invent this stuff?"

"Nope. Dow developed it."

"Who?"

"Dow. The Dow Chemical Company, Midland, Michigan. You know, the company that makes the complete line of chlorinated solvents—Dow Trichloroethylene and Dow Perchloroethylene Industrial for vapor degreasing, and Dow Methylene Chloride for stripping and cleaning metals. Why don't you write them for the whole story?"

YOU CAN DEPEND ON DOW

For more data circle 325 on Reader Service Card

Dr. C. Fred Gurnham
Head, Dept. of Chemical Engineering
Michigan State Univ.

SPOTLIGHTING FINISHING PROGRESS

Soldering the "Impossible"

The joining of uncommon metals and materials like glass and ceramics by a soldering operation is now possible. Such materials, and others like stainless steel and aluminum, resist soldering by ordinary techniques. Even if a joint is produced on these substances, its bond strength is usually poor, and early failure is likely. This problem has been solved by a new soldering technique, developed and reported by Joseph C. McGuire of the Los Alamos Scientific Laboratory*

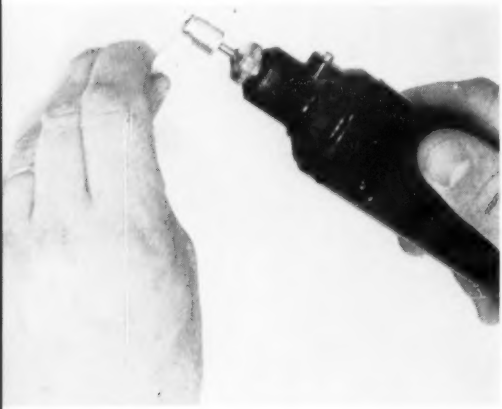


Fig. 1—Detail photograph shows Los Alamos Scientific Laboratory's new soldering technique. Here a small grinding wheel is shown while being "loaded" with Wood's metal.

No elaborate equipment is necessary for soldering by the Los Alamos process. The technique is best adapted to assembly operations on small parts, although there is no reason why large joints could not be joined by the same type of process. Aircraft and electronics industries are expected to find the new method of value, and it is simple enough

*Operated by the University of California for the Atomic Energy Commission.

FOR THE TOUGHEST CORROSION-PROOF TANK LINING

specify AMER-PLATE VINYL SHEET

—*molded* under 750 psi at 350° F. for maximum density.

Unlike other vinyl sheet linings, Amer-Plate is neither laminated nor calendered, but is molded under pressure and heat. The remarkable result is a smooth, extremely dense membrane, impervious to most plating and pickling solutions, oxidizing acids, alkalies and salt solutions. Being non-toxic and non-contaminating, it also may be safely used for lining tanks for food products.

Seams are easily heat-welded to provide a continuous impenetrable layer. Sheets are available in standard 3/32" and 3/16" thicknesses in both black and light gray.

Maximum adhesion is achieved with Amer-Plate 20Y Adhesive. This remarkable product bonds the Amer-Plate tenaciously to wood, steel and concrete surfaces so that once it has set, it is almost impossible to remove. Even in immersed temperatures as high as 160°, Amer-Plate 20Y Adhesive and Amer-Plate sheet lining remain completely unaffected. Amer-Plate membrane sheathed with acid-proof brick is an unbeatable combination for protection of high temperature pickling tanks and other critical applications.

Although Amer-Plate is resistant to most normal abrasion, if damaged, it can be repaired easily (even years later) right on the job.

Factory trained Amer-Plate applicators are located in all major cities to give you *immediate* service. You can be assured of expert workmanship—in the least amount of time. For additional technical data, please write:

Expert Application Insures Uniform Results

Electronically Tested Before Use

Ready For Years Of Dependable Service

Amercoat

CORPORATION

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Evanston, Illinois • Kenilworth, New Jersey • Jacksonville, Florida • Houston, Texas

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to be used in the home workshop or hobby shop.

Among the materials investigated and successfully soldered by Mr. McGuire are soft glass, Pyrex, ceramics, and metals. Solder joints in all of the metals and alloys so far tried have been successful, even including aluminum, cobalt, molybdenum, niobium, stainless steel, tantalum, titanium, tungsten, and vanadium. Graphite, and various carbides, borides, and nitrides have been processed without difficulty. Even wood can be soldered, by the use of low-melting-point solder.

Process

The only unusual equipment required for soldering "impossible" materials by the Los Alamos method is a small hand grinder and abrasive wheel and a stick of Wood's metal. In preparation for

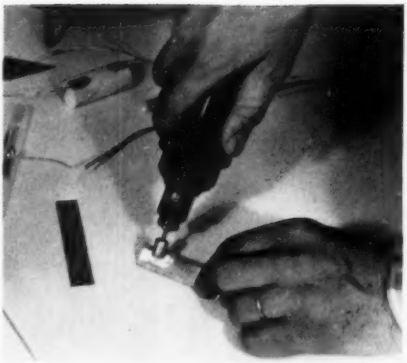
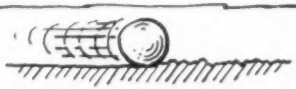


Fig. 2—Tinning stainless steel with grinding wheel "loaded" with Wood's metal.

Barrel Finishing Notes:
by the abbot

NOTHING **BURNISHES** LIKE STEEL BALLS AND SHAPES

"For centuries craftsmen have smoothed metal surfaces with hand burnishers of hardened steel. Today, we mass-produce fine burnishes with Abbott *deep hardened* steel Burnishing Materials. Used with the Abbott 'Vertical' Barrel, they're unsurpassed for giving stampings, castings and other parts a *truly burnished* finish."



"Abbott Burnishing Balls and Shapes *duplicate* the action of hand burnishing tools . . . they roll-down minute surface imperfections and reduce porosity."

Write for the Abbott burnishing booklet!

THE ABBOTT BALL COMPANY
1064 New Britain Avenue, Hartford, Connecticut

ABBOTT

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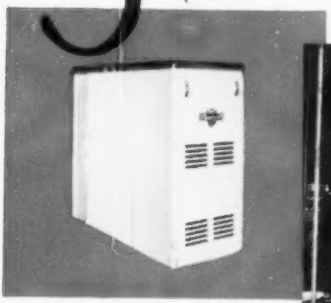
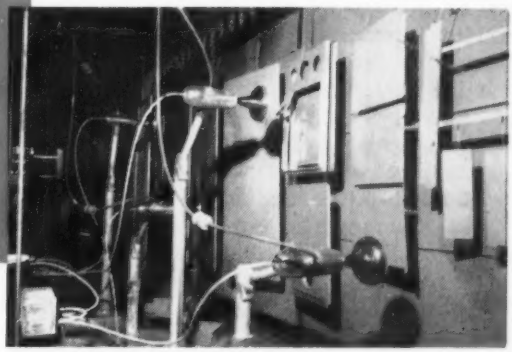
3 times as many Furnace Casings per gallon of paint with RANSBURG NO. 2 PROCESS!





This Lo Boy model, Series 6000, is typical of the Waterman-Waterbury line of winter air conditioners now painted electrostatically.

Quality of work is improved; Labor costs are cut and Production Stepped up 150% with

RANSBURG Electrostatic Spray Painting

Results exceeded expectations when Waterman-Waterbury, Minneapolis, modernized their finishing department and went from hand spray to Ransburg No. 2 Process in painting their quality line of heating and air conditioning equipment.

By the former hand spray method, W-W used a half gallon of paint to coat a single casing. Now, with Ransburg No. 2, they get SIX CASINGS PER GALLON . . . or 3 times as many per gallon. Furnace casings, as well as other painted parts which go into the famous Waterbury Furnaces, now get a uniform coating of .8-mil.

Production was increased, too, as automatic painting enabled them to step up the conveyor speed from 7 fpm to 11½ fpm. Where they formerly turned out a complete furnace in five minutes, NOW they assemble three in just six minutes . . . an increase of 150%. All in all, they figure the modernization program—with Electro-Coating—saved over $11,000 in the first three months of operation.

NO REASON WHY YOU CAN'T DO IT TOO!

Whatever you paint, we'd like to tell you more about the efficiencies and worthwhile savings which can be yours with Ransburg Electro-Coating Processes. Get our No. 2 Process brochure which cites many on-the-job examples of electrostatic spray painting on a wide variety of products. Or, we'll be happy to loan you our new film, "The Big Attraction" which tells the electrostatic spray painting story in sound and full color. Call or write

RANSBURG
Electro-Coating Corp.
Barth and Sanders, Indianapolis 7, Indiana

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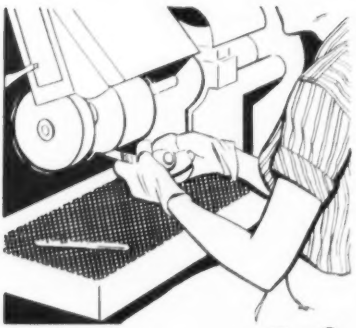
soldering, the abrasive wheel is preheated slightly by using it to grind hard metal such as steel or by direct application of heat. It is then brought to bear on a bar of soft solder such as Wood's metal or 50-50 indium-tin. The solder melts and flows onto the abrasive wheel, loading the abrasive grains with a thin, even layer of metal. Successive applications produce a fairly heavy deposit of solder, and condition the wheel for easy re-tinning after use.

The abrasive wheel, loaded with solder as just described, is then applied to the metal or other surface that is to be soldered. A pressure comparable to that used in mild grinding is employed. This operation abrades a thin layer of the surface, and the newly created clean surface is immediately coated with

Fig. 3—Soldering of two copper wires to a previously tinned ceramic surface.

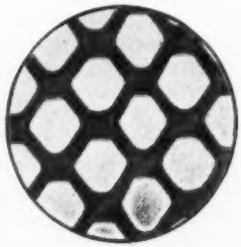
PROTECT FINE PLATED SURFACES



with **RP** *Neotex*

Neotex . . . the open pattern Neoprene rubber matting, protects highly polished finishes when used to line any surface where goods are worked on or in transit. In roll form, Neotex can be easily cut to any size or shape . . . it's rugged and long lasting, resistant to abrasives, caustics, heat, acids, oils, oxidation. Open pattern permits buffing compounds to settle. Available in a fine or coarse pattern. Write for complete information.

RP *Neotex*



RESEARCH PRODUCTS CORPORATION

Dept. 76, Madison 10, Wis.

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Filtering ADDS Profit

TO YOUR

Paint

Wash Water

Booth Operation

Delpark Paint Spray Booth Filters

Filter the overspray from your wash water system and you'll increase your profit by reducing operating costs. Paint overspray is automatically removed from the wash water by periodic filtration cycles. Paint particles cannot foul the water jets, settle to the bottom of the tank or cause undue wear of the pump and recirculating system. Down time of the booth for cleaning and maintenance is eliminated, maintenance labor is released for other duties and productive time of the booth is increased. Pigments are more easily reclaimed adding even more to the savings.

Here is loss that can be converted to profit with Delpark filtration. Delpark field engineers will give you complete facts on these money saving, profit making Delpark Filters for Paint Spray Booth Wash Water. Write today for more complete information.

Delpark

. . . FIRST in Filtration Advancements

Backed by more than 40 years experience in Industrial Filtration

INDUSTRIAL FILTRATION COMPANY • 166 INDUSTRIAL AVE., LEBANON, IND.

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solder transferred from the abrasive wheel.

If necessary, the tinning operation is applied to both of the surfaces that are to be joined. This is not required if one surface is an easily soldered material such as copper wire. The tinned surfaces can then be joined by customary soldering techniques using, for example, a standard 50-50 tin-lead alloy. No cleaning, fluxing or other pretreatment is needed beyond that provided by the abrasive wheel.

Operational Details

Several types of abrasive wheel were used in the Los Alamos investigations. A medium-grit wheel, 1/4 inch in diameter by 1/2 inch long was found suitable for the work described. The type of grinder is not critical, but a variable-speed tool may be desirable for use on certain materials.

Preheating of the work is beneficial, at least for inexperienced operators. A temperature of about 176 deg. F. is sufficient to melt the tinning solder and to secure a good tinned coat.

Unsatisfactory deposits may be obtained if the surface to be tinned is contaminated with grease or oil. Under such conditions the grinding-

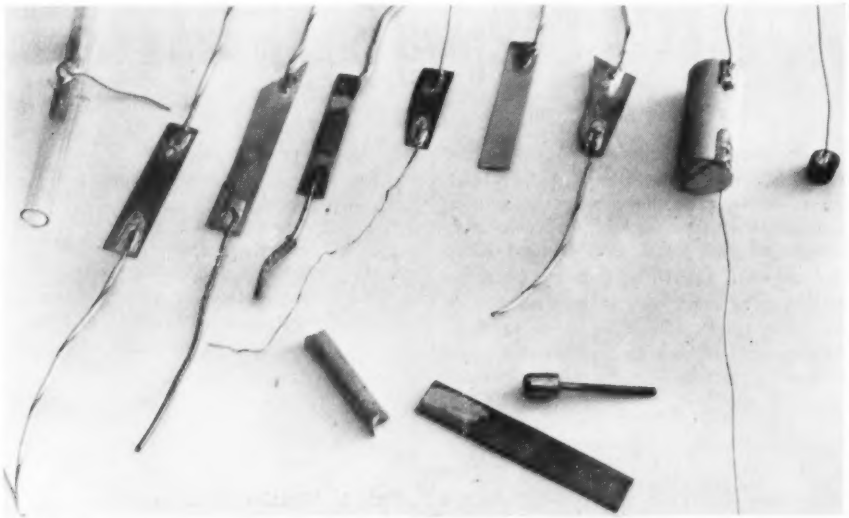
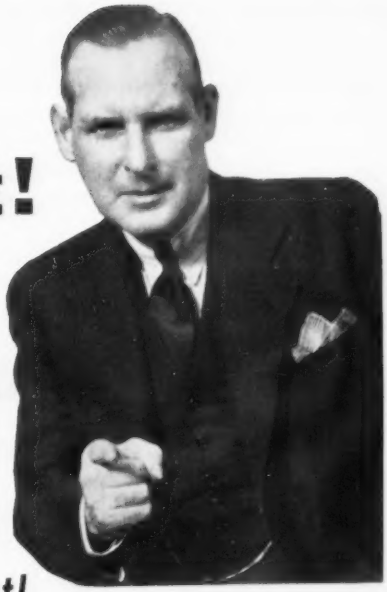


Fig. 4—Samples of materials soldered by Los Alamos Laboratory's new technique. Upper row, left to right: Pyrex glass, titanium, molybdenum, aluminum, tantalum, stainless steel, tungsten, ceramic, cobalt; lower row, left to right: samples of Wood's metal, tinned stainless steel, and loaded grinding wheel. Technique is used most for assembly of small parts. (Photos courtesy Los Alamos Scientific Laboratory, University of California.)

Ask us to prove it!



Oronite* ISOPHTHALIC provides harder films, greater durability, better gloss, *at lower cost!*

Just contact any Oronite office and request a demonstration of the superior properties of Isophthalic based coatings—whatever your individual application. Resin samples are available for all alkyd applications. These samples can be furnished you together with complete data on their particular formulations—also instructions for their preparation. You can then prove Isophthalic qualities to your own standards.

It's worth your time *now* to check ISOPHTHALIC—possibly the most important new major raw material for the surface coatings industry in the past half century.

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*T. M.

4351

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tinning operation produces a black, non-adherent deposit, instead of the desired shiny and firmly bonded coating. Too high a rotational speed of the abrasive wheel may also cause this black deposit.

The thin coating of solder deposited by the abrasive wheel can be built up in thickness by conventional soldering methods. The thin layer should not, however, be touched directly with a hot soldering iron, because such contact may contaminate the abraded surface and thus destroy the bond. Instead, heat should be applied indirectly, as by conduction from an adjacent untinned area. Melted solder can be added dropwise from a heated iron, provided that the iron itself does not touch the work.

Theory

Whenever a solid crystalline substance is fractured, new surface is created. Energy is required for this operation, because the atomic or molecular forces that held the solid together must be disrupted. The new surface carries much of this added energy in the form of unsatisfied bonds or forces, and is in a highly active and unstable condition. Unless the fracturing is carried out in a perfect vacuum, the surface promptly acquires a coating of any mole-

leading auto manufacturers
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QUARTZ
OVENS
Here's Why...
CLEPCO Quartz Paint Ovens are based on the use of special CLEPCO Quartz Heaters designed to emit that part of the heat spectrum most readily absorbed by paints.
Another major auto manufacturer reports that CLEPCO Paint Ovens are lower in original cost as well as in operating costs than the conventional gas fired convection ovens previously in use.
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NEW GOLDEN BONDERITE

How its golden color can mean better products, greater profits for aluminum fabricators

The golden coating achieved on aluminum by new Golden Bonderite is the key to a whole new concept in control, economy and efficiency.

No longer need you worry along with variations in coating weights and solution analyses that go up and down from hour to hour or day to day. The color of the metal as it emerges from the Bonderite machine is a visual check on solution effectiveness and coating quality. It looks the same—and it is the same—24 hours a day, seven days a week.

Parker "Reactifier" and How It Works

In ordinary surface treatment solutions of this kind, a build-up of impurities occurs as work is processed. These impurities affect the efficiency of the treatment in inverse ratio until finally the solution is beyond redeeming. The tank has to be dumped and a fresh bath made up.

This costly, wasteful procedure is ended when you use Golden Bonderite in conjunction with the sensational Parker "Reactifier" column, an exclusive apparatus that polices the solution constantly, removing the harmful elements and allowing you to use the solution indefinitely, without ever having to discard it.

Better Products, Better Profit

You use a surface treatment for your aluminum production to improve paint adhesion and corrosion resistance, to reduce rejects in the finishing department and to assure customer satisfaction. Uneven efficiency in surface treatment usually means loss of paint adhesion, production rejects and the danger of costly field service and replacements.

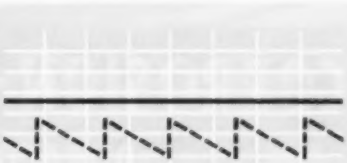
Golden Bonderite's uniform efficiency, so easily checked by color, will save you money.

1 It provides a uniform, effective paint base.

2 It allows you to schedule and maintain high production levels.

3 It permits operation at uniform low chemical concentrations.

4 It eliminates the need for dumping and rebuilding treatment solution.



Straight-as-a-string solution analysis

The saw-tooth line above is entirely too familiar to operators of conventional aluminum treatments. Efficiency sags as metal is treated, recovers as chemical is added, quickly sags again in use. Quality is uneven and uncertain.

New Golden Bonderite and the amazing new "Reactifier", developed by Parker, bring "straight-as-a-string" efficiency. No variation in quality even if you operate 24 hours a day, seven days a week. Solution analysis remains constant, free of impurities that reduce efficiency and quality.

Simple To Use

New Golden Bonderite may be applied by spray or immersion. Treatment time can be varied to suit production speeds and equipment. Golden Bonderite comes to you in concentrated liquid form, easy to handle and use.

Let us show you actual samples and test data on Golden Bonderite for aluminum. Call or write today!

NOTE: A companion product to Golden Bonderite produces an appealing scratch-resistant green coating on aluminum. It's a lovely color without further finishing. A natural for architectural products.

Since 1914—leader in the field

PARKER RUST PROOF COMPANY
2177 E. MILWAUKEE, DETROIT 11, MICHIGAN

BONDERITE	BONDERITE and BONDERLUBE	PARCO COMPOUND	PARCO LUBRITE	TROPICAL
corrosion resistant paint base	aids in cold forming of metals	rust resistant	wear resistant for friction surfaces	heavy duty maintenance paints since 1883

*Bonderite, Bonderlube, Parco, Parco Lubrite, Parker Pre-Namel—Reg. U.S. Pat. Off.

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cules that are conveniently near. If the fracturing is done in an air atmosphere, the coating is usually a layer of oxygen atoms or molecules. These are firmly bound to the solid surface, and may make soldering impossible unless the oxygen film can be removed by fluxing or other treatment. On ceramic surfaces, and on certain metals such as stainless steel, common fluxing agents are ineffective.

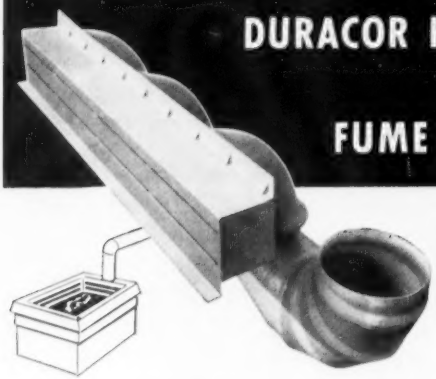
The Los Alamos grinding-tinning technique prevents formation of an oxide or other undesirable film. Grinding or abrasion of the surface causes fracturing and the formation of new molecular surfaces. The active surface attracts whatever fluid molecules are available; instead of air or oxygen, these are molten solder atoms furnished from the abrasive wheel. A thin layer of solderable metal is thus firmly united to the solid surface. It can be built up with additional solder.

★ ★ ★

AEROSOL PACKAGED FINISHES. Brochure entitled "Aerosols Unlimited" tells about the development of aerosol packaged products, particularly paint finishes. Shows Sprayon Products' research facilities and describes some of the problems that have been solved in this field. Write **Sprayon Products, Inc.**, 2075 E. 65th St., Cleveland 3, Ohio.

CORROSION-PROOF

DURACOR HOODS AND FUME DUCTS



DURABLE glass fibre reinforced plastic in a complete range of shapes and sizes

Newly developed for handling fumes from highly corrosive chemicals in operations such as plating and pickling, DURACOR hoods and ducts provide permanent resistance to corrosion.

They are fabricated from specially compounded thermo-setting plastics which are combined with glass or other synthetic fibers. Hoods and ducts can be produced in almost any desired shape. They are light in weight, durable and strong (up to 30,000 psi flexural strength). Write today for complete information.

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DURAGOR is another development by CEILCOTE!

THE CEILCOTE COMPANY, INC.

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STAINLESS STEEL BUFFING COMPOSITION

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OUTSTANDING FOR CUT AND COLOR IN ONE OPERATION WITH SISAL BUFFS

The BUCKINGHAM PRODUCTS CO.

POLISHING and BUFFING COMPOSITIONS

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Limited quantities of reprints of the following articles from PRODUCTS FINISHING are available to readers without charge.

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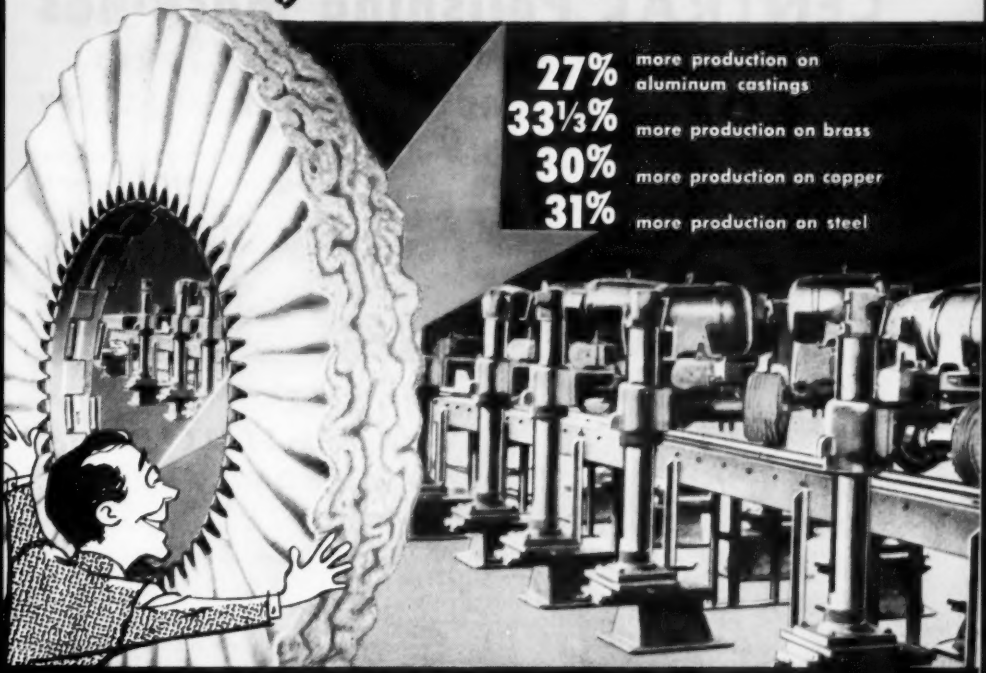
For more data on advertisement on opposite page, circle 336 on Reader Service Card——→

Take a Peek... *for Peak Production!*


27% more production on aluminum castings
33⅓% more production on brass
30% more production on copper
31% more production on steel

American's 7 Centerless Buffs
GUARANTEE 25% to 33⅓% MORE OUTPUT
on your present equipment!

DUPLICATE these CERTIFIED GAINS in *your* plant! Patented "Pre-Assembly"* permits assembling complete buffing heads (up to 100 sections each) *in advance . . . instant* replacement in a *single operation . . . faster* changeovers, *negligible* down-time.

COOLER RUNNING American Centerless Buffs permit *faster* machine speeds *without burning . . . longer* buff life, *fewer* changeovers, *increased output* of every man and machine!

*U.S. Pat. No. 2,599,785

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BIAS CLOTH BUFF
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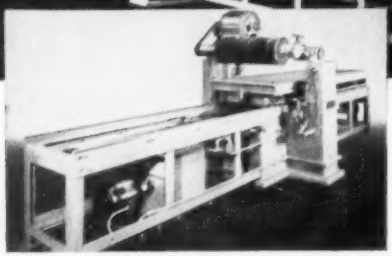
Pay Big Dividends in Time Saved and Improved Quality

TANDEM ROLL HORIZONTAL MACHINE
For cut down and finishing of sheets, plates, extrusions, trim, etc.



SINGLE ROLL HORIZONTAL MACHINE
Hydraulically operated, with patented hydraulic contour device. Tables on all machines may be oscillated sidewise.

- *FASTER*
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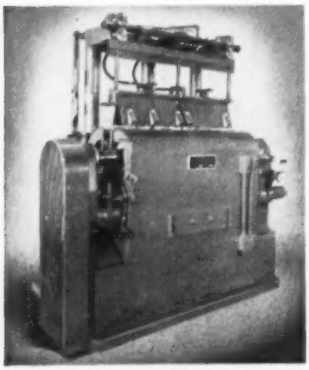
For cutting costs, improving quality and speeding up your finishing operations on sheets, plates, extrusions, rods, tubing, auto trim and many odd-shaped pieces, Central Polishing Machines will meet every production requirement as they have done so successfully wherever they have been installed.

Horizontal Machines are built in single and tandem roll models, 30", 40" and 50" widths, in any length. Are hydraulically or electro-hydraulically operated from a central operator's station and equipped with our patented hydraulic contour control. Stroke adjusted from 2" to full capacity in stepless increments. Tandem rolls permit cut down and finishing operations with one set-up.



VERTICAL POLISHING MACHINE
2 sizes, 18" and 36" stroke. Hydraulic contour device. Gives a high finish to many odd-shaped pieces.

Vertical Machines are available with 18" or 36" stroke. They are fast, economical and easy to operate. Patented hydraulic contour device permits finishing many different shapes such as hardware items, handles, cutlery, auto and appliance trim, escutcheon plates, etc. Central Vertical Machines may be set in batteries where a sequence of operations is desired. Conveyor systems and fixtures can be furnished.

Write for full information or send us samples of work to be finished.

CENTRAL MACHINE WORKS
74 Commercial St. Tel. PL 6-1500 Worcester 8, Mass.

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Photo Report of A.E.S. Convention

An on-the-spot report including photos of speakers and quotable quotes from papers presented at the A. E. S. Annual Convention, held June 16-20, in Montreal, Canada. Prepared by the Products Finishing Editorial Staff.

G. ROSS DAVIDSON, general chairman, opens the A. E. S. 44th Annual Convention, welcoming the members and guests to Montreal. Shown with him are (left to right): Ralph D. Wysong, A. E. S. third vice president; H. E. Head, A. E. S. 2nd vice president; Clyde Kelly, A. E. S. past president; Rev. Frank C. Mesle; Charles M. Douglas, vice chairman; Supt. Brakefield-Moore, Royal Canadian Mounted Police; Mr. Davidson; P. M. Coady, educational chairman; Mrs. G. Ross Davidson, ladies' chairman; Dr. Samuel Heiman, A. E. S. president; Francis T. Eddy, A. E. S. 1st vice president; John P. Nichols, A. E. S. executive secretary; John A. Palik, Jr., president, National Association of Metal Finishers.

J. J. DUFFY, JR., Pennsalt Chemicals Corp., president of the Metal Finishing Suppliers' Association, Inc., addressed the group at its annual luncheon-meeting. Mr. Duffy thanked the officers and committee members, and particularly Jeff G. Carrique, M.F.S.A. liaison representative for the 1957 Convention.

EDGAR J. SEYB (Bright and Semi-Bright Crack-Free Chromium): *"Of primary interest in the development of the bright crack-free chromium plate is its improved corrosion resistance . . . Crack-free chromium plated to a thickness as high as 60 mils is still quite bright."*

BARNET D. OSTROW (Leveling in Cyanide Copper Baths: A Further Study): *"It is now possible to secure positive leveling with cyanide copper baths, regardless of the rms of the basis metal . . . the magnitude of such leveling is comparable to that obtained from leveling acid copper or bright nickel."*

C. B. SANBORN (Electroplating on Nickel and Nickel Alloys): *"The simplest way to prevent contamination of the activation baths used prior to nickel plating is to use two tanks for the liquids instead of one—one is used for the anodic phase and the other for the cathodic phase."*

DR. FREDERICK A. LOWENHEIM (Corrosion Resistance of Tin and Tin-Alloy Electrodeposits): *"Tin undercoats increase corrosion resistance . . . tin plus zinc appears to be as good as cadmium, at least on sea-coast exposure tests . . . Tin-nickel should not be plated directly on steel . . ."*

DR. M. H. JONES (Part IV: The Effect of Different Ferrous Metals on the Performance of a Watts Nickel Deposit): *"Non-metallic inclusions are an important cause of plate failure on nickel plated ferrous metal. A plate thickness 1½ times the diameter of the inclusion is required to cover the inclusion."*

DR. WALTER BECK (The Effects of Plating on High-Tensile-Strength Steels): *"Steel plated with electroless nickel and then cyanide cadmium was protected against hydrogen cracking . . . Cadmium plated directly on steel from the fluoborate bath produced almost no cracking."*

WALTER L. PINNER, of Houdaille Industries, Inc., session chairman, in commenting on Dr. Jones' paper stated that "The late George B. Hogaboom was quite correct when he insisted that we should always look to see what's under the plate . . ."

W. F. STEVENS (Analytical Methods for Detecting Trace Quantities of Cyanide Compounds in the Plating Room Effluent): *". . . cyanide can be determined by acidifying a sample and conducting vapors formed through filter paper moistened with benzidine copper acetate. Intensity of color varies . . ."*

C. F. IVINS, JR. (A New Look in Plating-Room Power): *"With good cleanliness and proper loading, generator trouble is almost non-existent . . . The use of new types of voltage controllers with plating rectifiers has greatly broadened their practical application in the plating industry . . ."*

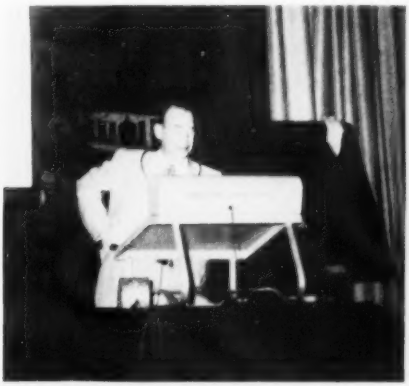
LLOYD O. GILBERT (Accelerators and Their Function in Phosphatizing Solutions): *"Accelerators for phosphatizing solutions are chemical oxidants which do not enter the coating. The principal systems contain nitrates, nitrites or mixtures of the two. Nitrates are used where heavier coatings are desired."*

STANLEY R. RICH (Latest Developments in Electroplating with Ultrasonics): *"Ultrasonics provides a new type of agitation for electroplating baths; thus it permits us to raise plating current densities . . . Application of ultrasonics in electroplating is still heaviest in pre-plate procedures."*

T. J. V. CUDBIRD (Corrosion and Materials of Construction in the Plating Room): *". . . coatings for protecting external surfaces of steel tanks in plating rooms should be at least 6 mils thick . . . The greatest potential for fiberglass in the plating room is for exhaust ducts."*

S. L. HENN (A Study of Application Techniques in the Use of Liquid Buffing Compounds): *"As the speed of the buffing wheel increases, less compound is retained . . . Increased atomizing pressure favors retention of compound . . . A small amount of compound applied frequently is more efficient..."*

DOUGLAS R. NEWMAN (The Future of Plastics in Electroplating Plants—paper prepared by H. Silman): *"There is an increasing tendency for exhaust systems to be made of plastic . . . Rigid P. V. C. is generally preferred for this application because of the ease with which it may be fabricated."*



HOWARD J. McALEER (Sisal Story): *"Sisal buffs effect a more aggressive cutting action than cotton buffs, but they do not produce as fine a finish . . . Sisal buffs can handle a wider variety of operations if they are treated chemically specifically for the applications involved."*

PAUL GLAB (Barrel Plating): "*Oblique barrels or horizontal barrels can be used in barrel plating . . . The principal advantage of horizontal barrels is that barrel loads can be larger . . . New techniques will make it possible to plate with an average current density of 100 a.s.f. or more . . .*"

JAMES C. WITHERS (Iridium Plating and its High-Temperature Oxidation Resistance): "*Iridium offers a considerable amount of protection to molybdenum at 1000 deg. F. even at thicknesses of only 0.0005 inch . . . good deposits can be obtained with an iridium conc. of 5.33 to 6.66 g./l. in a molten bath . . .*"

DR. I. W. WOLF (Further Studies in Nickel-Iron Electrodeposits): "*One use of nickel-iron (79 per cent nickel, 21 per cent iron) electrodeposits is as a thin film magnetic memory element—as a valve or control for an electric force. Utilization of these magnetic properties will increase the scope of the field.*"

DR. ALLEN E. CAHILL (Surface-Catalyzed Reduction of Copper): "*An alkaline formaldehyde-copper-tartrate system effects continuous deposition of copper at 25 deg. C. and 100 deg. C. . . . We were able to obtain a thickness of 0.001 inch copper before this plating solution deteriorated.*"

DR. ROY C. SPOONER (The Sealing of Anodic Oxide Films): "*In sealing of anodic films pH values below a value of 5 should be avoided . . . we would recommend a pH of 6 . . . Panels sealed with dichromates showed no pitting after 340 hours exposure. Sodium molybdate sealants are superior to water.*"

RAYMOND F. LEDFORD (Impurities in Chemical Bright Dip Solutions for Aluminum—Their Effect and Removal) (Co-author, John F. Jumer, Alchemize Corp.): "*Purification by ion-exchange and evaporation is a practical and economically feasible method for removing a variety of contaminants.*"

J. M. ANDRUS (A Study of the Effects of Various Electrolytes on the Anodic Film): "*A bath containing 2½ per cent sulfuric acid and 5 per cent glycollic acid, operated between 70 and 170 deg. F., effected considerable improvement in coating weight and abrasion resistance . . .*"

WALTER E. POCOCK (The Role of Chromate Treatments in the Finishing of Aluminum): "*Chromate coating of aluminum is suitable for paint pretreatment; final coating; production of corrosion-resistant conductive finishes; treating objects too large to dip; and for treating assemblies containing other metals.*"

Practical Applications of Modern Products

Recent Trends in Plating Power Supplies

By J. E. MUNGENAST
Rectifier Dept.
General Electric Co.

In recent years, the biggest news in plating power supplies has been the germanium rectifier. Many large installations have been made recently. Equally important, however, has been the development of automatic controls for power supplies to the point where they are economically feasible for installation in many plating plants.

Germanium rectifiers have become popular for several reasons: 1) they have a high efficiency rating and long life; 2) the small size of the germanium element makes possible the construction of the compact units desirable for modern plants; 3) the compactness makes it possible to seal the rectifier element from the corrosive atmosphere of the plating room. Some recent installations of germanium rectifiers are shown in the photographs accompanying this article.

Increasing use of automatically controlled power supplies has been brought about by the desire of the plater to improve his quality control as well as by the manufacturing economies made by the electronics industry, making it possible to produce less expensive automatic plating power supplies.

The use of automatic equipment is not new to the plating industry. Some of the first automatic materials handling was done on the early automatic plating machines. But until recently only large installations warranted the expense involved in specially engineered voltage or current stabilization.

Recent advances in magnetic amplifier and saturable reactor techniques, however, have made possible the more widespread use of automatic rectifiers. New circuitry and special magnetic materials have resulted in the modern saturable reactor shown in Fig. 1. Such an assembly can be completely impregnated to withstand the corrosive atmosphere of the plating room. Since it has no moving parts, its life span is comparable to a well-designed transformer.

Using automatic controls, it is possible to set the desired voltage or current and hold it precisely in spite of tank load variations or a.c.-line-voltage fluctuations, which are sometimes severe.

Such automatic regulation results in uniform, high-quality deposition. While automatic output voltage stabilization is the most popular control used in the plating industry, automatic current stabilization is indispensable

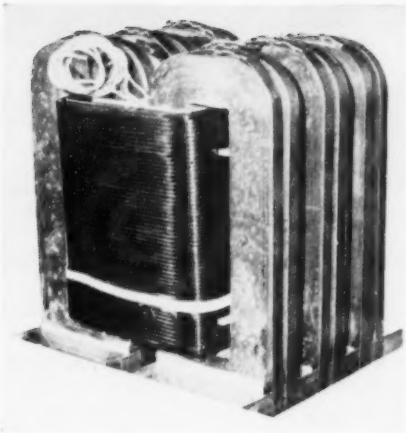


Fig. 1 — Series-wound, low-ripple saturable reactor for air-cooled germanium rectifier.

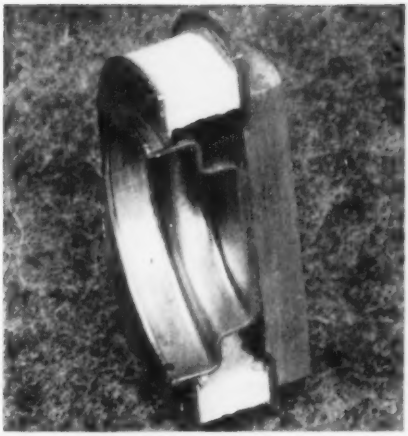


Fig. 2—Germanium wafer of this germanium cell is in stainless steel and ceramic housing.

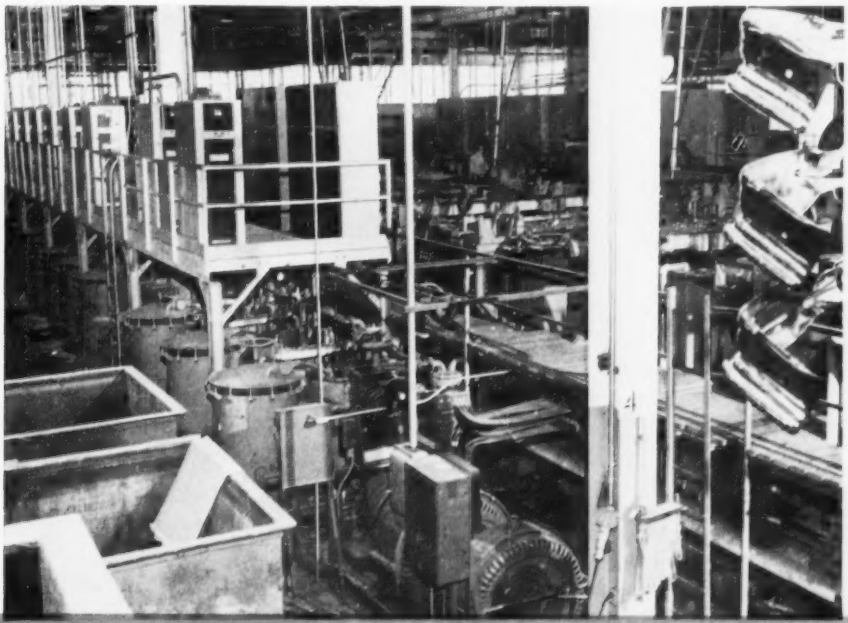


Fig. 3—Light weight and compact size of the balcony-mounted germanium rectifiers shown in bumper plating installation above allow their use in a very small area. They are suspended above main floor so as not to occupy valuable space on main floor.

"Automatic rectifiers can be an invaluable tool to the plater who seeks good quality control . . ."

where precise build-up is needed, such as in plating diesel engine cylinder liners.

For some machines, a modified constant voltage control is used, whereby different output voltages are held, depending upon the machine load. This varying output voltage is an approximation of constant current density control.

For chromic acid anodizing, where output voltage must be low to begin with, rising gradually as the anodic film builds up, a combination cycle has proven satisfactory. The rectifier begins the cycle under automatic current stabilization, automatically limiting the voltage to a low value. As the anodic film builds up, the voltage increases until a preset value is reached. Then the unit switches over to automatic voltage operation for the desired period of time.

Uniform power is an important part of profitable plating. Too heavy a deposit means high material cost and too light a deposit means rework or failure in service. Automatic rectifiers can be an invaluable tool to the plater who seeks good quality control consistent with profitable operation.

For more data circle 1 on Reader Service Card

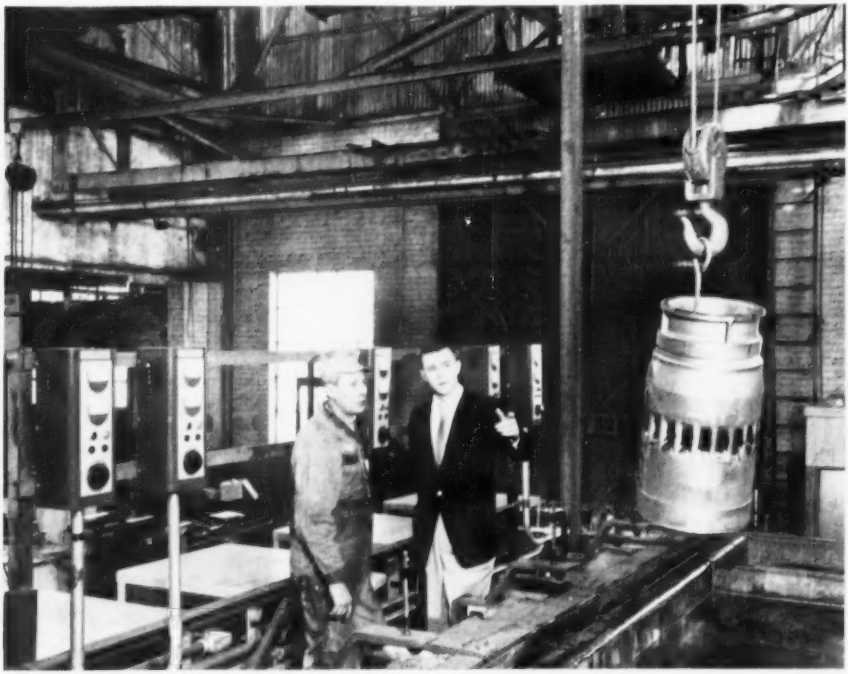
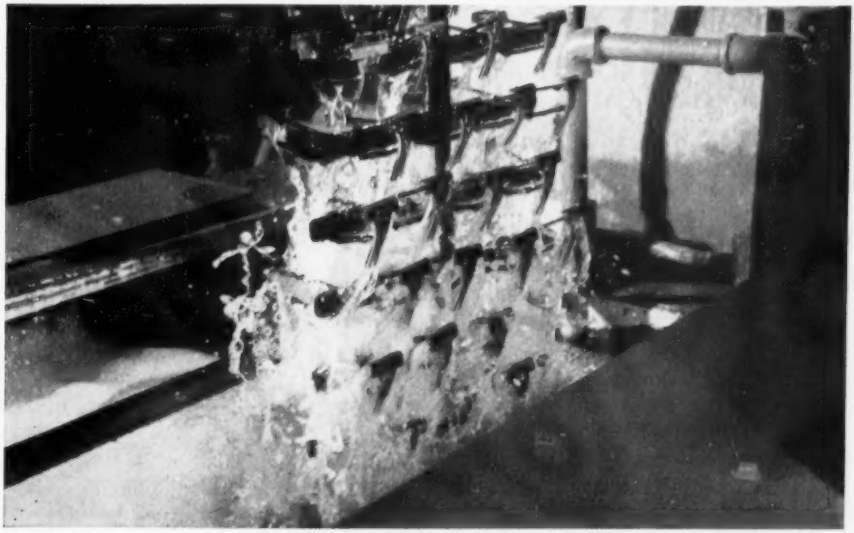


Fig. 4—Automatic current stabilization is used in this installation to plate diesel engine cylinder liners within close tolerances.

(Fig. 4 courtesy Auto City Plating Co., Detroit, Mich. Other photographs courtesy The General Electric Co., Schenectady, N. Y.)

REPORT NO. 6 / ON LOWERING TODAY'S COST OF PRODUCTION



Soak cleaners that eliminate solvent pre-treatment on most work

step up production, lower cleaning costs

Faster, more efficient production often hinges on quick-working compounds and a minimum number of production steps.

Diversey heavy duty alkaline soak cleaners No. 404 (for brass and steel) and No. 909 (for all metals), save up to 50% of present cleaning costs *on most work* by eliminating solvent dips . . . eliminating hand cleaning and wiping . . . eliminating vapor degreasing. Fast, thorough, non-caustic cleaning action removes quenching oils, buffing compounds and other soil, making solvent pre-treatment operations unnecessary.

Instant wetting completely penetrates foreign matter and starts the cleaning action as soon as work is emerged. Soil is rapidly broken up and dispersed throughout the solution. It *will not cling* on draining work. Since Diversey soak cleaners work so quickly, they are well geared to the demands of automatic equipment having short cleaning cycles.

There's an added margin of safety for your men also. Both No. 404 and No. 909 are mildly alkaline, non-toxic and non-caustic. They will not sting, burn or cause dangerous skin irritation.

For literature on these two products, write today to *Metal Industries Department, The Diversey Corporation, 1820 Roscoe Street, Chicago 13, Illinois.*

PLANTS IN CHICAGO, NEWARK AND SOUTH GATE, CALIF. WAREHOUSES IN PRINCIPAL CITIES.

DIVERSEY. SOAK CLEANING

For more data circle **338** on Reader Service Card

New System Paints 1000 Different Parts

The G. H. Tennant Company produces power sweepers, floor machines, scarifiers, roof scrapers and concrete routers.

More than 1,000 different parts must be painted in producing these machines. A new finishing system, specially engineered for Tennant's new Minneapolis plant, speeds the washing and drying of all parts (they weight from ounces to 800 pounds) and speeds the spraying and baking of the prime coat and the bright orange or cream finish coat.

The conutinuous-conveyor system enables Tennant to paint parts faster and it helps to produce a high-quality finish at the same time.

The system, including a 3-stage washer, a dry-off oven, a 2-man spray booth and a 74-foot baking oven, was engineered, built and installed by the

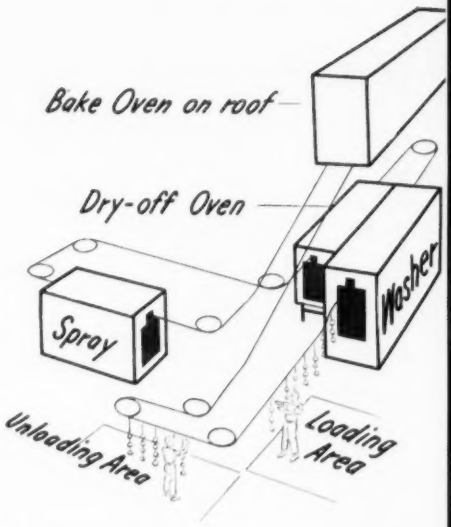


Fig. 2—This flow diagram shows perspective (not actual size) of Despatch metal-processing and paint-finishing system installed in G. H. Tennant Company's new Minneapolis plant. Bake oven is built on plant roof.

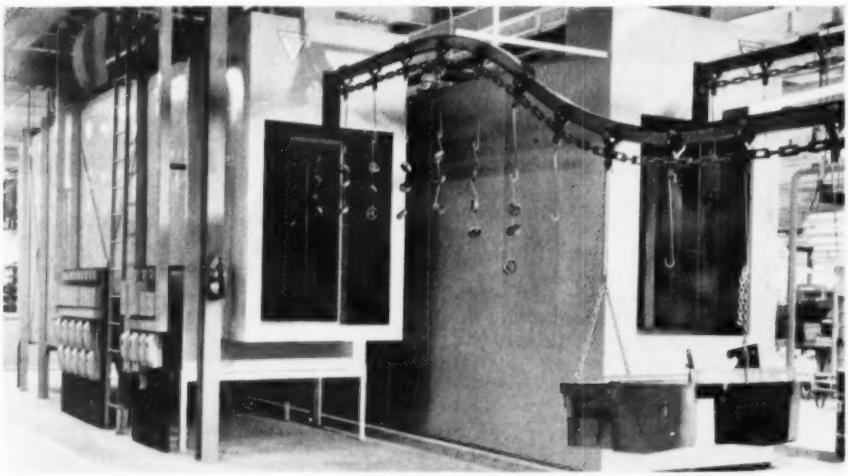


Fig. 1—All parts enter 3-stage, 44-foot washer at right, then return through 34-foot dry-off oven at left. Note master control panel alongside dry-off oven. In washer, surface of metal parts is converted to iron phosphate coating, which is helpful in preventing corrosion. Temperature of dry-off oven: 350-400 deg. F., depending on size of parts.

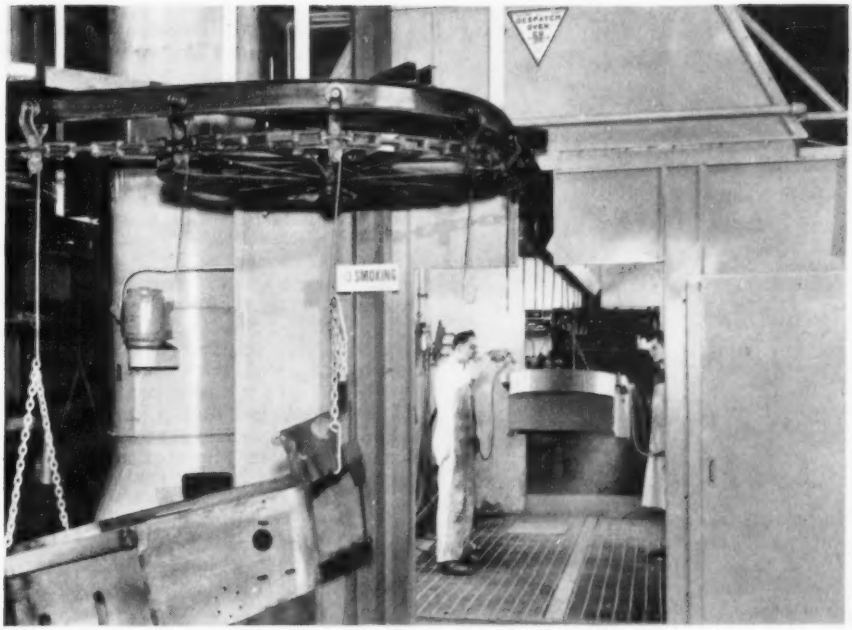


Fig. 3—Conveyor speed of 8 feet per minute gives sprayers time to handle basket loads of small parts or large frames such as shown in this photograph. After prime coat is sprayed on and baked in roof-top baking oven, parts go through the entire system again (the washer is temporarily shut off) for spraying and baking of the finish coat.

Despatch Oven Company, Minneapolis, in cooperation with the Tennant Company.

Metal parts, from basket loads of small units to large frames measuring up to 4½ by 5 by 6 feet, first enter the 44-foot washer where a pressure spray of Oakite Cryscoat 89 converts the surface to an iron-phosphate coating. This is followed by a cold water rinse, then a hot "FH" rinse that hardens the rust-resistant and corrosion-resistant phosphate salts.

The parts then pass immediately into the 34-foot dry-off oven which is maintained at a temperature of 350 to 400 deg. F., depending upon the size of the parts.

The conveyor carries the parts to the down-draft-filter spray booth where two men apply the prime coat or either of the orange or cream finish coats.

Speed of the 500-foot-long conveyor is approximately 8 feet per minute, giving the sprayers sufficient time for any size of the 1,000 different parts requiring finishing.

After the prime coat is sprayed and baked on, the parts go through the system again (washer is temporarily shut off) for spraying and baking of the finish coat.

The 74-foot-long bake oven is installed on the roof of the one-story plant to save valuable floor space.

Just-sprayed parts travel up and into the oven through its underside opening. Baking lasts eight minutes at 330 deg. F. The conveyor makes two

Fig. 4—Finished product, this Tennant Model "80", has 74 parts, each twice sprayed and baked. This is a floor sweeper for industrial use in cleaning up dirt and litter. (Photographs courtesy Despatch Oven Company.)

passes through the oven.

The system will handle 100 to 150 loads at one time. The complete cycle for one coat requires 60 minutes.

For more data circle **2** on Reader Service Card

★ ★ ★

Protective Painting of Structural Steel, by F. Fancutt and J. C. Hudson. Published by the Macmillan Co., 60 Fifth Ave., New York 11, N. Y. 102 pages. Price, $4.50.

A resume of the latest available information on the best methods of protecting structural steelwork against atmospheric corrosion by means of paint, used alone or in conjunction with metallic coatings.

The book includes a discussion of proper surface preparation, choice of paints, primers, and best methods and conditions for application of the finish coats.

Other subjects considered are the use of flame cleaning, pretreatment primers, heat-resisting paints, and painting methods for metal coatings on steel.

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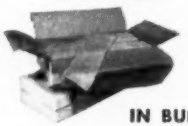

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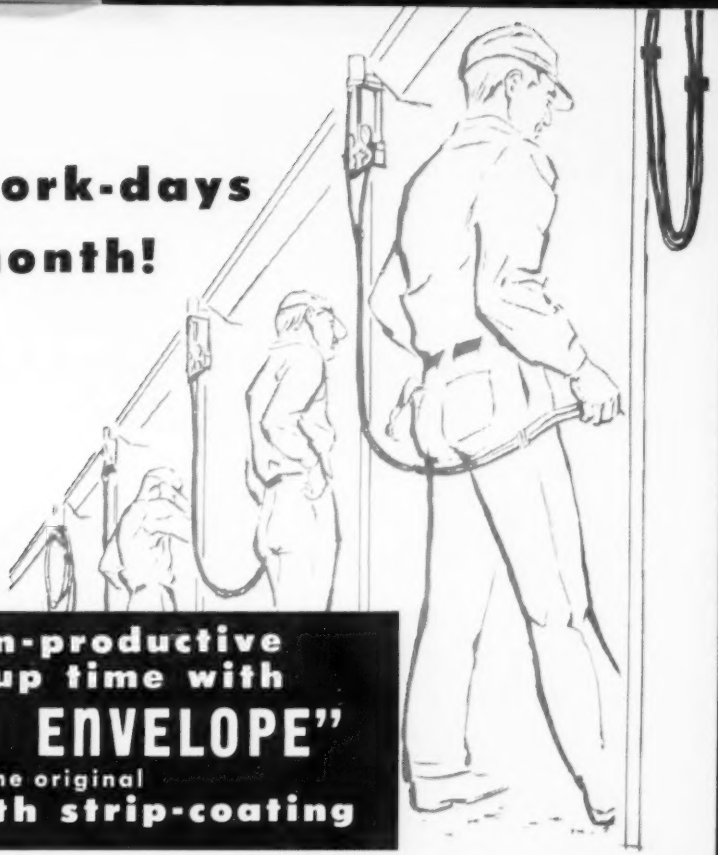

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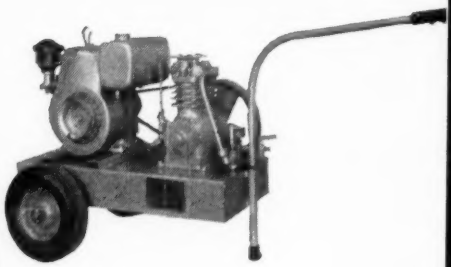

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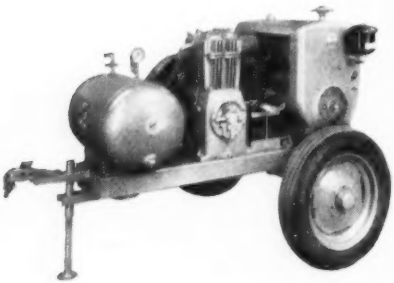

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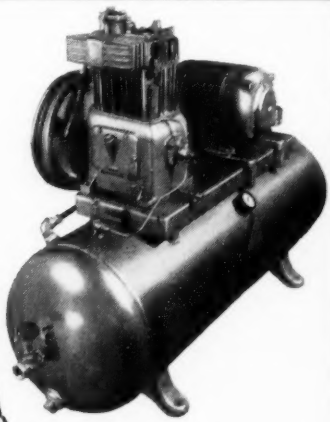

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To be sure you get the right compressor

Ask your jobber or write direct to us for a copy of *How to select an Air Compressor* which tells you what to look for in an air compressor and *Binks Catalog 820* which shows available models, accessories, etc. Or, if you wish, a Binks Engineer will call at your plant and help you pick the right equipment to give you long service and low operating costs. No obligation.

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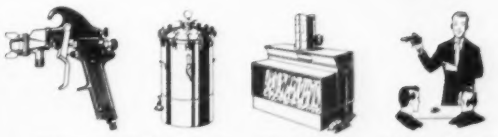

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New Equipment, Materials, Processes

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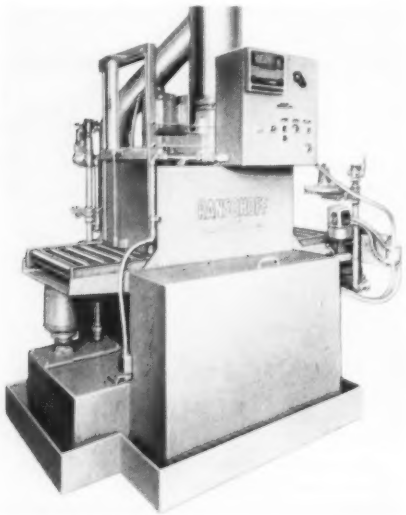
Washing Machine

An "inter-process" washer designed to remove chips and cutting oils from parts between machining operations has been introduced by Ransohoff, Inc., 610 N. Fifth St., Hamilton, Ohio.

Operation of the machine is simple. Parts are loaded into the machine via a roller conveyor, and vertically sliding, air-operated doors at both ends of the compact cabinet are closed by manual operation of a control lever. A pump is then actuated. It pumps heated washing solution through spray nozzles, which thoroughly spray each load of parts being cleaned. This load of parts is then removed and the cycle is repeated.



Ransohoff Cabinet-Type Inter-Process Washer

Machines of this type are recommended for use wherever exceptional cleanliness is required as an aid to accuracy. They are also valuable where production requires processing of an intermittent flow of parts.

Further information on these machines is available from Ransohoff, Inc., 610 N. Fifth St., Hamilton, Ohio.

For more data circle **3** on Reader Service Card

★ ★ ★

Automatic Tape Applicator

A machine for mechanically applying pressure-sensitive tape to polished sheet metal has been introduced by Westoak Machine Corp., Oakland, Calif.

The idea for this machine was originally conceived by a firm that polishes stainless steel. Stainless Polishing Corp., also of Oakland, wanted such a machine to answer the need for a method of applying protective tape with exact registration and without bubbles or wrinkles. Westoak Machine Corp. was set up to design the machine, now makes this machine as well

as other special machinery for service companies and steel mills.

Essentially the machine consists of a table about 4 by 10 feet with a motor-driven applicator carriage mounted on runner bars on each side of the table. The table top is a ¾-inch Masonite sheet placed on a heavily braced steel frame. The solid surface does not allow the sheet to buckle or give. A single roller carrying tape rides on the top portion of the carriage. The machine handles only one roll of tape at a time, since the rolls are not exactly square at the ends.

To operate, the sheet is placed on the table and the applicator roller is lowered into position. The motor-driven carriage then automatically rolls the tape onto the sheet. A friction brake on the tape roller shaft controls the amount of tension placed on the tape while it is being applied. Proper tension is important to prevent wrinkles. The tape, "Scotch" Brand No. 343, is pressed onto the sheet by a rubber-covered roller that is pressed down hard during operation to push air bubbles ahead of the roll. After the sheet is coated, the motor stops and the operator slits the tape from the roll. The loose end of the tape is caught by a perforated vacuum bar and held in place until the next application begins.

The machine requires about 1½ minutes to coat a 10-foot sheet. One man can operate the machine, but two men are required to load and unload the sheets.

Further data on this machine is available from Minnesota Mining and Manufacturing Co., 900 Bush St., St. Paul 6, Minn.

For more data circle 4 on Reader Service Card

★ ★ ★

Aluminum Conversion Coating

Development of a process that provides aluminum with a surface conversion coating for protection against corrosion, for improvement of paint adhesion and for ornamentation, has

Four-foot-wide stainless steel sheets are coated with pressure sensitive tape in 90 seconds with the Standard Sheet Coater. One man can operate the machine, but two are needed to load and unload the 10-foot steel blanks. (Photo courtesy Minnesota Mining & Mfg. Co.

been announced by Turco Products, Inc. Called Turcoat 4178, the process meets Government Specification MIL-C-5541.

Chief advantage of this process is said to be the "quick fix" offered by the Turcoat material. The 4178 coating becomes fixed and non-smearing immediately upon application. Parts coated with Turcoat 4178 can be handled and racked while still wet. Drying is unnecessary.

The coating formed by the process is of the surface conversion type. That is, the coating is actually partially derived from the metal surface itself and is, therefore, firmly interlocked and integral with the metal surface. It is acid resistant and causes only slightly higher electrical resistance. It is not brittle. The metal can be bent or formed after the coating is applied.

Applied by immersion, spray washer or by conventional hand methods, the coating formed is a thin, smooth, noncrystalline film with a slight metallic lustre. The color is a light yellow, with red and greenish iridescence.

The Turcoat 4178 process is easy to control. pH is the only critical factor. Although standard temperatures and concentrations are observed, these features are not critical, and minor deviations will not substantially affect the process. The process causes only slight sludging.

Furnished in dry powdered form, Turcoat 4178 is said to be free from

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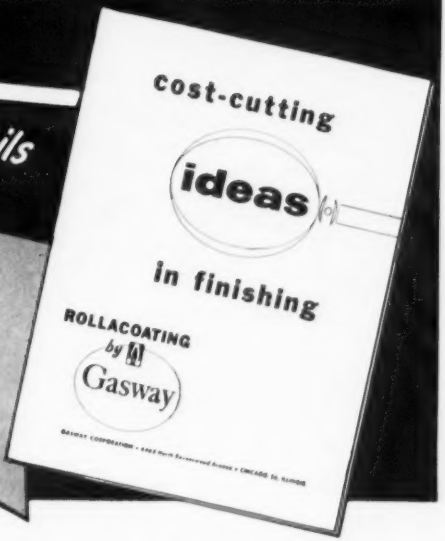

GET ALL THE FACTS—This new complete file gives you case-histories of successful roller coating applications on many different products such as signs, plywood panels, building products, metal stampings, awnings, siding, etc. Gives all the details on coating machines for individual panels as well as continuous metal strip cleaning, treating and coating lines. Shows how metal can be formed *after* coating without marring finishes. Send for your copy of this FREE fact file today!

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objectionable odors and dangerous fuming. It is not hazardous to handle.

Detailed technical literature may be obtained by writing to Turco Products, Inc., 6135 South Central Ave., Los Angeles 1, Calif.

For more data circle **5** on Reader Service Card

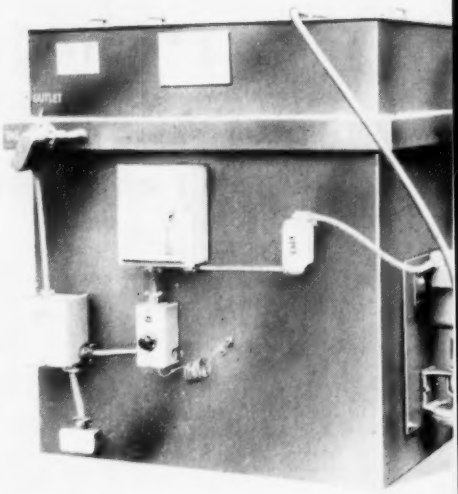
★ ★ ★

Vapor Degreaser

An improved version of the Aircon Model 75 vapor degreaser is supplied as a complete unit, ready to operate.

The "packaged" degreaser includes a ¼-h.p. motor; a spray lance; a centrifugal pump; electrical heating coils (220 or 440 volts); and facilities for distilling its own solvent, thus assuring a constant supply of clean solvent.

A working area 38 by 22 inches and a vapor depth of 24 inches gives the unit a cleaning capacity of 600 to 900 pounds of steel per hour. Water consumption is 30 g.p.h.



Armstrong Aircon Model 75 Vapor Degreaser

The Armstrong & White unit is suitable for use with trichlorethylene solvent. It includes a low-level thermostatic control and a water-flow interlock, which combine to prevent boil-out if water supply fails.

Further data on this machine is

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...or small
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5 GAL. MODEL

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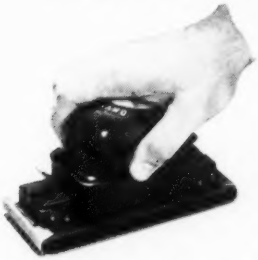
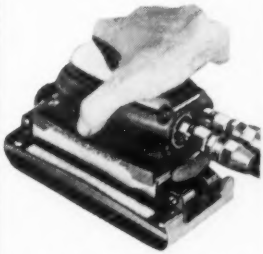
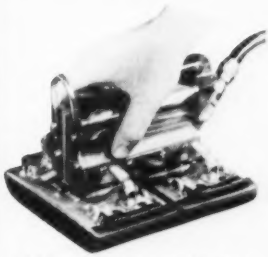
Six sizes of Sundstrand Air Sanders—weighing from 3 to 30 lb—all suitable for wet or dry sanding, give you unmatched freedom of choice. Let us show you advantages of each—without obligation, of course.



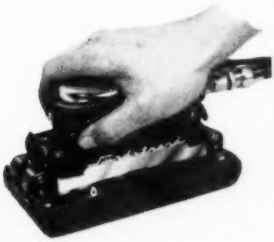
OS-800—lightest weight orbital air sander on the market, at only 3 lb, packs the power and speed needed for production jobs.



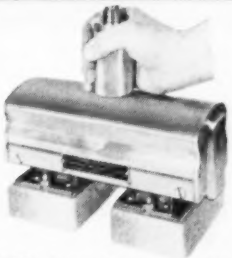
OS-700—single-pad orbital sander, weighing 5 lb, operates over 6000 cycles per minute.



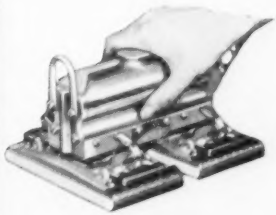
1000—straight-line sander with big abrasive area, operates at 2500 oscillations per minute, palm lever control, 7½ lb.



SP-101—straight-line, single-pad sander, 3000 oscillations per minute, 5 lb.



600—heavy-duty, straight-line unit for sanding, pumice rubbing, or polishing, 1100 oscillations per minute.



4000—straight-line, two-pad sander with longer, slower stroke; 2100 oscillations per minute, 9 lb.

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SUNDSTRAND

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available from the Aircon Div., Armstrong & White, Inc., 136 Freeport Rd., Cheswick, Pa.

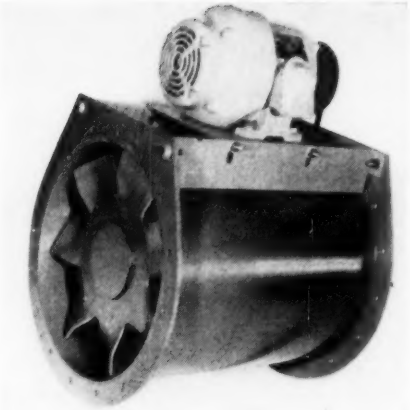
For more data circle **6** on Reader Service Card

★ ★ ★

Plastic Fan

An axial fan of solid plastic construction has been announced by Heil Process Equipment Corp., 12901 Elmwood Ave., Cleveland 11, Ohio.

Models constructed of either Rigivin (rigid vinyl) or Rigidon (glass reinforced plastic) are designed for a wide range of corrosive service. The Rigivin fans may be used with strong acid or alkali fumes at temperatures up to 150 deg. F. The Rigidon fans are recommended for most acid fume services and temperatures up to 200 deg. F. Hydrochloric, sulfuric, nitric, phosphoric, hydrofluoric and other acid or mixed fumes can be handled.



Heil Corrosion-Resistant Plastic Axial Fan

Standard sizes of 18, 24, 30, and 36 inches and larger are available, with capacities from 2,000 c.f.m. All units are V-belt driven and designed with

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"Finishing Touch"
"To achieve a fine finish on beautiful sterling silver flatware, you start with a smooth, uniform surface," says Gorham Mfg. Co., leading silver–and goldsmiths. "To eliminate major defects in the metal before final finishing, we've found that the most efficient method is to use Paramount Felt Bobs with a mixture of fine pumice and oil. Paramount felt wheels and bobs are ideal for polishing flatware and holloware. Easily formed and having an affinity for pumice and oil, they produce a better surface than any other buff."
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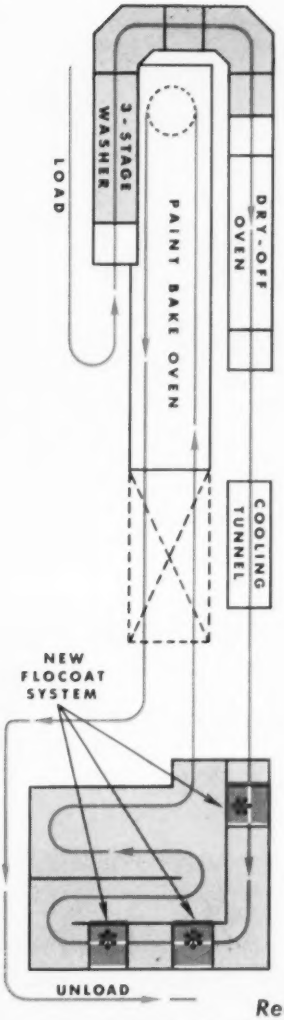

NEW 3 Color Flocoat System with 5 Minute Color Change

This system was specially engineered by Burdett Engineers to provide automation in multi-color paint applications in the plant of the Douglas-Fisher Corporation in Bellwood, Illinois, manufacturers of tubular metal furniture.

This complete finishing system by Burdett features a new concept in Flocoating with a 3-color system that provides color change in approximately five minutes.

This system consists of 750 feet of No. 348 conveyor, variable from 4 to 12 FPM; a 3-stage washer; a 25' dry-off oven heated by Burdett No. 10-L Burners, providing a heat range from 200° to 450° F.; a 15' cooling tunnel; a Burdett 3-color Flocoating System; and a Burdett 2-Pass "A" Type "Radiant Heat" Paint Baking Oven with a range from 200° to 425° F. Operating at 325° F. on current production, the total baking cycle is approximately 8 minutes.

Here is a perfect example of the engineering skill and production "know-how" that Burdett offers you to open the door to improved quality of production — increased output — and lower cost of operating.

Whether you are considering a completely new finishing system—an addition to your present layout—or, the renovating of your old system—consult Burdett for the engineering answer with the bonus values—either "Radiant" or "Convection"

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corrosion-resistant seal, slinger ring, external grease fittings and externally vented bearing housings so that the drive is isolated from corrosive fumes. The fans are dynamically balanced to assure quiet, vibration-free service.

For more data circle **7** on Reader Service Card

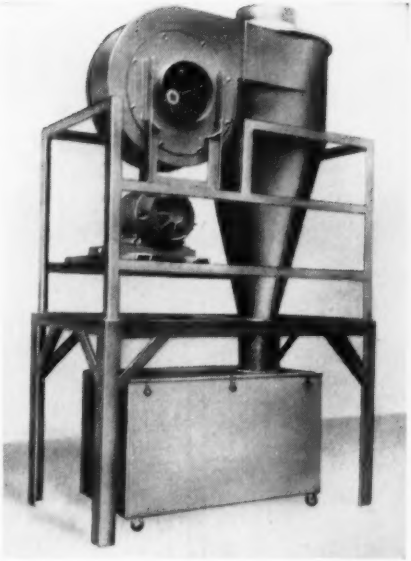
★ ★ ★

Dust Collector

Aget Manufacturing Company, 1390 E. Church St., Adrian, Mich., has announced a dust collector with a roll-away dust-collecting bin that has a storage capacity of 37½ cubic feet.

This unit, known as the 90 NB 50 is designed for use in grinding, buffing and miscellaneous operations where a large volume of dust, chips, shavings and other residue is produced by an operation.

The collecting bin moves on casters.



Aget 90 NB 50 Dust Collector: roll-away bin

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Technological knowledge acquired through many years of experience, plus special processes and equipment, assure the high quality of our Rhodium Plating Solutions.

Recommended for contact surfaces of switches, waveguide parts and other electrical applications, such as printed circuits... Can be applied in extremely heavy deposits, up to 100 milligrams per square inch.

Rhodium plating provides the advantages of whiteness, lustre and corrosion resistance of a precious metal.

Consult our staff, without obligation, about your specific plating problems.

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Specialists in the Unusual... SINCE 1901

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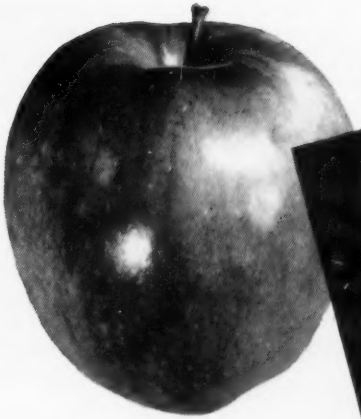

APPLE POLISHING IS NOT OUR BUSINESS but METAL FINISHING IS!

and for **THAT JOB** here's America's finest Medium Priced Line!

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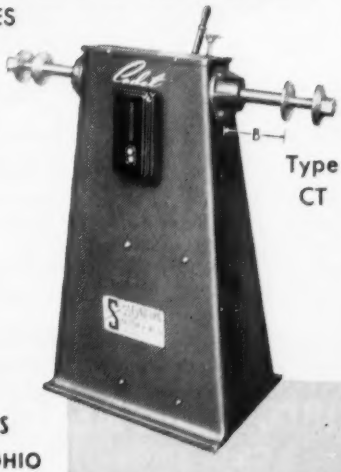
BUFFERS—POLISHERS

IN 16 DIFFERENT TYPES AND SIZES

Top production efficiency in buffing, polishing or coloring with uniform finish in maintaining peripheral speed. Available in 2, 3, 5, 7½ and 10 HP.



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the STANDARD electrical tool co.

BUFFERS - POLISHERS and MACHINE TOOLS

2518 **RIVER ROAD • CINCINNATI 4, OHIO**

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It can be pushed to the dumping spot or it can be pulled out from under the collector so that a forked lift truck can handle it. The bin top is held in place by luggage-type clamps, and a flexible hose runs from the cyclone outlet to the bin lid. The lid is lifted upward automatically by springs when the clamps are raised.

This collector has an air-handling capacity of approximately 10,000 c.f. m. and uses a 15-h.p. motor. Overall dimensions are 48 by 82 by 124 inches.

For more data circle **8** on Reader Service Card

★ ★ ★

Portable Belt Conveyor

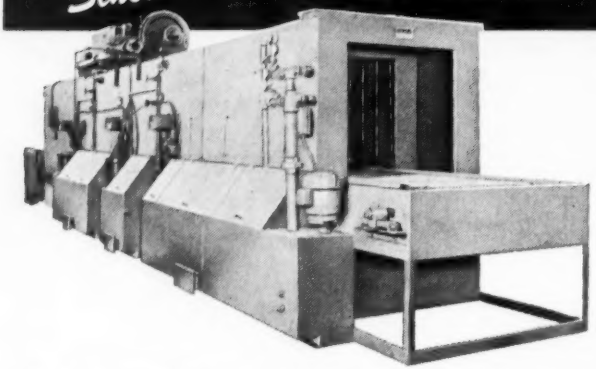
An aluminum Portable Belt Conveyor, hydraulically adjustable and engineered to facilitate unloading, transferring, boosting and stacking, has been developed by the E. W. Buschman Co., Cincinnati, Ohio.

The Trojan Series A Conveyor adjusts by finger-touch to optimum height and angle of incline.

In the extreme raised position, this conveyor provides a method for loading and unloading freight cars, taking bags and boxes away from sealers, and so on. In low-level position, it acts as a power component in wheel and roller conveyor lines. In-between positions can be selected to aid in many product-handling operations.

Available in various lengths, from 10 to 20 feet, the Trojan Series A operates in both forward and reverse.

CIRCO
Since 1923
• PARTS WASHERS
• INDUSTRIAL OVENS
• SPRAY PICKLING
• FLOW COATING



METAL PARTS WASHERS • PHOSPHATIZING UNITS
COMPLETE FINISHING SYSTEMS

If you have an application for cleaning, phosphatizing or pickling of steel surfaces, Dry-off ovens, Dip-coating, Flow-coating, Bake-ovens, individual units or complete systems, it will pay you to discuss methods, operating costs, maintenance costs, equipment requirements and layouts with CIRCO Engineers.

FOR CIRCO SALES ENGINEER OR BULLETINS AND QUOTATIONS, WRITE TO:
CIRCO EQUIPMENT COMPANY
Clark (Rahway), New Jersey

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American Rad. & Std. Sanitary
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Fred Arbogast Co., Inc.
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Martin Bros. Electric Co.
Martin Steel Products Corp.
Mine Safety Appliances Co.
Mor-Flo Heater Co.
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The Perfection Burial Vault Co.
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We engineer your finishing problems

Reliance Electric & Eng. Co.
The Rybolt Heater Co.
The Scott & Fetzer Co.
Taylor-Winfield Corp.
Thompson Products, Inc.
Truck Engineering Corp.
Vacuum Metallizers, Inc.
John C. Virden Co.
Vichek Tool Co.

For more data circle 352 on Reader Service Card

Trojan Series A Portable Belt Conveyor

The non-slip belt, 12 inches wide, safely elevates at angles up to 30 degrees without cleats; for steeper angles, cleats are available to assure efficient handling.

The aluminum alloy frame and removable undercarriage fold easily, to make this conveyor compact for shipment and storage.

The Trojan Series A features Buschman Quick-Eez Coupling for fast set-up in conjunction with other types of conveyors. The Power Unit, easily removable, includes a ½-h.p. motor on units up to 16 feet, and a ¾-h.p. motor on units 18 to 20 feet. Belt speed is 55 f.p.m.

Literature on the Trojan Series A can be obtained from the manufacturer, The E. W. Buschman Co., 4516 Clifton Ave., Cincinnati 32, Ohio.

For more data circle **9** on Reader Service Card

★ ★ ★

Aerosol Corrosion Preventive

A fluorine polymer with low loss dielectric properties and excellent re-

Infra Red Ovens
ANY SIZE-ANY SHAPE
You Can Assemble Your Own
with driQuik

REDUCE DRYING TIME FROM HOURS TO MINUTES as many factories have done and also produce better products at less cost whether metal, wood or plastic. Write for engineering data today.

INTERLOCKING SECTIONS

Your own maintenance crew can build panels or ovens for any application easily: heating, baking, dehydrating, curing, degreasing, etc. Pre-engineered, completely wired sections of unique ceramic type lava coated infra-red generators whose temperature can be changed to any percentage of rated power without waste of current. No bulbs or sockets to burn out.

driQuik DIVISION
DRY CLIME LAMP CORP.
GREENSBURG, INDIANA

For more data circle **353** on Reader Service Card

Completely automatic unattended unloading end of the Stevens Automatic Barrel showing control panel and rectifier site located above machine.

Unistrut says— "COSTS 50% LOWER— FINISH BETTER with . . . STEVENS AUTOMATIC BARREL MACHINE"

Every day in the Unistrut Corporation plant, Wayne, Michigan, thousands of small parts are zinc plated and shipped to Unistrut warehouses throughout the United States. All of these parts are zinc plated automatically by a Stevens Automatic Barrel Machine.

Unistrut high standards require a uniformity of plate on the parts used in their metal framing systems. But since installing the Stevens Automatic Barrel they have reported other advantages as well—"less handling, smaller inventories and quicker shipments." When you consider the 50% cost savings of actual plated parts too, it all adds up to a terrifically profitable investment.

Why don't you tell us your metal finishing problems and let us make recommendations. There's no obligation.

Write today for your copy of the 1957 bulletin, "The Modern Concept . . . Stevens Automatic Barrel Processing and Plating Machine." Write to Frederic B. Stevens, Inc., 1800—18th Street, Detroit 16, Michigan.

STEVENS 75 YEARS OF SERVICE

FREDERIC B. STEVENS INCORPORATED
YOUR METAL FINISHING SUPERMARKET
DETROIT 16, MICHIGAN

For more data circle 354 on Reader Service Card

sistance to acids, alkalies, salts, and organic solvents now is available in push-button aerosol containers for spray-coating of small metal and ceramic items. This product has been announced by the DuPont Co., manufacturer of the basic components of this product: "Freon" propellant and trifluorochloroethylene monomer.

Chemically a polymer of trifluorochloroethylene, the aerosol product offers the same application advantages, in small scale operations and laboratory test work, that are attained with power spraying equipment in large commercial coating jobs.

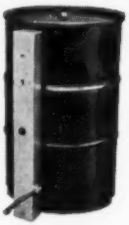
Typical applications of the thermoplastic resin coating include corrosion-resistant lining of tanks and pipes, general maintenance finishes where equipment is exposed to corrosion, moisture sealing, magnet wire insulation, and chemical valve lining. Typical small items for which the aerosol package provides an ideal coating medium include stirring rods and agitators, laboratory containers, aluminum beakers, silicon rubber gaskets, bus bars, bobbin guides, thermometer stems, high-frequency coil dielectrics, resistors, and valve floats.

Especially useful among thermoplastics because of its zero moisture absorption, high-temperature resistance, and anti-tack and release properties, the aerosol-packaged resin can be applied in very heavy film thicknesses without "mud," or surface

Aircon VAPOR DEGREASERS

ANY SIZE . . .
Standard or Custom

Aircon Vapor Degreasing Systems are available in a complete line, ranging in size, from the smaller bench and barrel-type units to the larger, permanent, high capacity degreasers.



Aircon Degreasers are:

- GAS, ELECTRIC OR STEAM HEATED
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NO EXTRAS TO BUY!

Write today for full information

WE ARE DESIGNERS AND ENGINEERS OF SPECIAL DEGREASING EQUIPMENT. CONSULT US ON YOUR DEGREASING PROBLEMS.

Armstrong & White
CHESWICK, PENNSYLVANIA

For more data circle 355 on Reader Service Card

Continuous ON-THE-LINE STRIPPING

with

RAP® TANK SOLVENT #52

Efficiency Proved Through Daily Use in Many Major Installations

As illustrated RAP Tank Solvent #52 thoroughly cleans conveyor hooks (racks or baskets) with no line down-time. It excels in all other applications, such as removing Scotchlite or Prismo, baked enamels and lacquers etc.

RAP Tank Solvent #52 is: fast and sure, non-flammable, non-caustic, practically odorless, practically non-toxic and will not harm aluminum.

Other RAP products daily meeting industry's needs ——

RAP Metal Bond: Safe and sure for the preparation of metals before painting (iron, steel, galvanized, aluminum, etc.). . . also removes rust.

RAP Flush Off Paint Remover: Widely used for industrial maintenance.

We invite custom formulating for special or unusual applications on cleaners and removing of paints.

Just write, wire or phone . . . for complete technical information.

PHONE TWINBROOK 2-4553 **POCKRANDT, INC.** 1108 MARQUETTE ST. BAY CITY, MICHIGAN

For more data circle **356** on Reader Service Card

cracking and without blisters, it is stated. Film thickness can be varied easily by building up light spray coatings, allowing one to five minutes between coatings for evaporation of the solvents in the aerosol dispersion.

After the desired wet coating thickness is applied, the resin coating must be fused in a vented oven at 480 deg. F., fusion temperature of the resin. Baking time required for each coated article will depend upon the size and cross-section of the coating work, the manufacturer explains. A No. 30 wire requires about 20 seconds bake time, a 30-gauge tin plate takes about three minutes, and a quarter-inch bar requires up to 15 minutes.

A cold water quench completes the coating application and, when desired, additional coatings of the resin can be applied one over the other, without laminating, after fusing and cooling of each individual coating. Coatings of three to five mil thickness are desirable for moisture - resistant coatings and three mils for anti-tack or anti-sticking applications, with two separate coatings recommended to assure complete coverage and freedom from pin holes.

For most satisfactory service of the resin coatings, articles to be coated should be cleaned thoroughly in a degreasing solvent and then grit- or sand-blasted, or roughened with emery paper. A special undercoat or primer gives best results, although the manufacturer says undercoating is not manda-

PHOSPHATING PROGRESS with Metabond

A SMOOTH, AMORPHOUS-LIKE PHOSPHATE COATING

METABOND permanently anchors your finish to any base metal, providing greater lustre and added beauty to your finished product, thus increasing its sales appeal.

We have installed a complete pilot plant duplicating actual production conditions in the field. **YOU ARE INVITED** to bring samples of your own products or panels, if you desire, run them through our pilot plant and compare the results with *any other process or method* . . . you will be amazed at the difference.

Pick up your telephone and call us collect from any place—**MAIN 1-2864** for complete information and literature about **METABOND,** the non-sludging, amorphous zinc phosphating, the biggest step forward in phosphating in the last twenty years.

Let us work out your metal finishing problems without obligation!

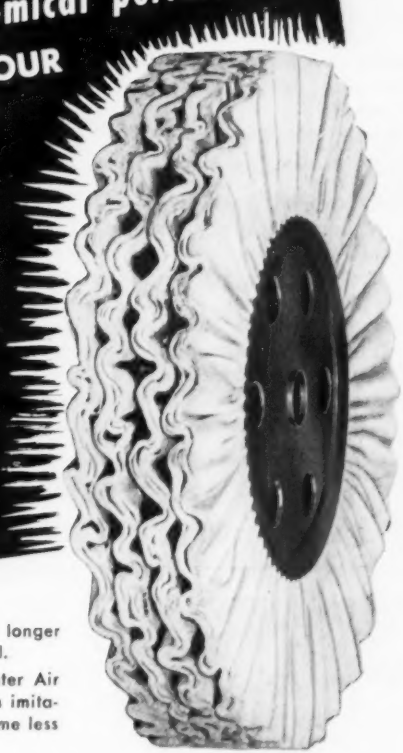
INTERNATIONAL RUSTPROOF CORPORATION
1575 MERWIN AVENUE • • • CLEVELAND 13, OHIO
MANUFACTURERS OF RUST PREVENTATIVES & CORROSION SOLVENTS

For more data circle **357** on Reader Service Card

Schaffner Bias Buffs

your answer for economical performance

- TAILOR MADE FOR YOUR TOUGHEST BUFFING OPERATIONS
- FULLY VENTILATED
- COOLER RUNNING
- LOW COMPOUND CONSUMPTION
- FEWER SECTIONS NEEDED
- GIVES LONGER LIFE



The buff you select is all important—it will mean longer buff life and greater production from a buff wheel.

Specify and buy the proven Schaffner Metal Center Air Cooled bias (type) Buff, and don't be satisfied with imitations. You'll find Schaffner buffs last longer, consume less compound and reduce rejections.

Write us. We'll run a test for you in your own plant and prove our claims.

"Schaffner Bros. make things Shine"
Paul — Bob — Gus

Schaffner

MANUFACTURING COMPANY, INC.

SCHAFFNER CENTER • ROSEWOOD 1-9903 • EMSWORTH, PITTSBURGH 2, PA.

• TRIPOLI COMPOUNDS • CHROME COLORING ROUGE • GREEN ROUGE • JEWELERS' ROUGE • CROCUS COMPOUND • STAINLESS STEEL COMPOUNDS • ALUMINUM BUFFING COMPOUNDS • ALL-PURPOSE BUFFING COMPOUNDS • WHITE COLORING COMPOUNDS • NICKEL BUFFING (LIME) • EMERY CAKE • PLASTIC BUFFING COMPOUNDS • TALLOW GREASE STICK • PUMICE GREASE STOCK • POLISHING WHEEL CEMENT • STEEL POLISHING COMPOUNDS

COMPOUNDS MADE IN BAR, SPRAY OR PASTE

For more data circle **358** on Reader Service Card

tory where the coated article will not be exposed to severely corrosive conditions or where the article requires only a high-temperature dielectric coating.

"Polyfluoron" thermoplastic resin spray is a product of Acme Resin Corporation, 1401 Circle Avenue, Forest Park, Ill.

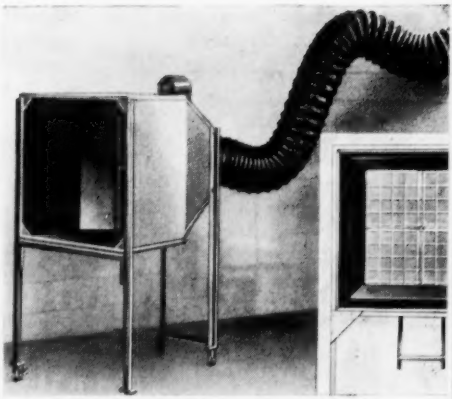
For more data circle 10 on Reader Service Card

★ ★ ★

Portable Spray Booth

A portable spray booth for use in small areas has been developed by Detroit Fabricating Corp., 7521 Aubin St., Detroit, Mich. It will be distributed by the Atech Supply Co., Detroit.

The spray booth is available in two sizes, 35 by 33 inches and 48 by 48 inches. It is useful for painting small parts where floor space is limited.



Portable Spray Booth: for use in small areas

A fan draws overspray through arrestor-type filter pads. The efficient air filtration made possible by this booth reduces cleaning time.

The booth stands on four legs which can be equipped with wheels, avail-

YOUR PAINT SPRAY BOOTH CAN BE MORE EFFICIENT, MORE ECONOMICAL

Photo Courtesy Burnaby Venetian Blinds Ltd., Winnipeg, Canada

. . . With the many advantages of RP Paint Arrestors

Easily and economically installed, RP Paint Arrestors brought the advantages of minimum floor-space and down-time requirements, plus the most effective method of trapping paint overspray to this booth. Your plant, too, can benefit with RP Paint Arrestors. Write for complete information.

RP . . . PRODUCTS OF RESEARCH

RESEARCH PRODUCTS CORPORATION

Dept. 38, Madison 10, Wis.

For more data circle 359 on Reader Service Card

Pick the right electrocleaner for your job!

PRODUCT	FEATURES	STEEL	BRASS	COPPER	ZINC DIE CASTINGS
C.S.R.*	Outstanding for removing carbon smut from steel and cast iron. Has excellent resistance to chrome contamination.	YES		YES	
F.S.*	The industry standard for heavy-duty, reverse-current electrocleaning. High detergency and soil tolerance.	YES			
90	Heavy-duty, reverse-current electrocleaner. Combines good over-all detergency with excellent carbon and general smut removal. Has high resistance to chrome contamination.	YES		YES	
B.D.	Heavy-duty, reverse-current electrocleaner with extra-high conductivity. An economy product with extremely low use-cost.	YES			
B.N.	A versatile electrocleaner for steel, copper, brass, bronze, and zinc-base die castings. Also cleans and activates nickel before chrome.	YES	YES	YES	YES
LECTRITE NF	An inhibited electrocleaner for brass and zinc-base die castings in automatics or hand lines. Prevents etching, staining, and excessive oxidation during cleaning and long transfers.		YES		YES

*Reg. U.S. Pat. Off.

Wyandotte job-fitted electrocleaners give better electrodeposits, eliminate production headaches, reduce costs!

Your Wyandotte Industrial Representative is a metal-cleaning specialist with years of experience, and all of Wyandotte's facilities behind him. He can show you—by actual demonstration in your shop—how these electrocleaners can help you improve your operation. It costs you nothing, and can lead to really significant savings. Why not contact him today? *Wyandotte Chemicals Corporation, Wyandotte, Michigan. Also Los Nietos, California. Offices in principal cities.*

Wyandotte CHEMICALS

J. B. FORD DIVISION

THE BEST IN CHEMICAL PRODUCTS FOR METAL FINISHING

For more data circle 360 on Reader Service Card

able as optional equipment. Also available as optional equipment is a flexible exhaust pipe which permits venting out any window.

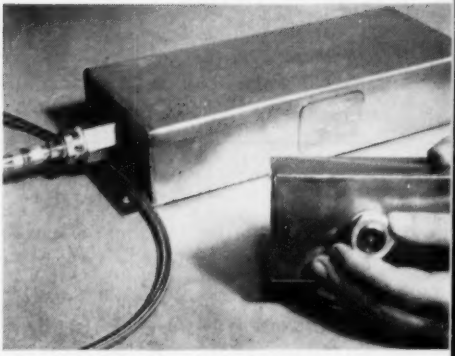
For more data circle 11 on Reader Service Card

★ ★ ★

Ultrasonic Transducers

Branson Ultrasonic Corp., 26 Brown House Rd., Stamford, Conn., has introduced a line of ultrasonic transducers that is said to be especially useful in applications where detergents, solvents, alkaline cleaners and certain mild acids must be used. Because the housings are stainless steel with arc-welded joints, these transducers are leak proof and highly corrosion resistant.

Two types of welded transducers are available. The B series is fitted with a Teflon-gasketed bulkhead mounting, so that the electrical connection with the cable coming from the ultrasonic generator is made outside the cleaning tank. E series transducers are completely immersible in



Branson E Series Transducer (background) can be completely immersed; B Series Transducer (foreground) has Teflon-gasketed bulkhead mounting, so that electrical connection can be made outside of the treatment tank.

have your silk screens made by **NAZ-DAR!**

Silk, Nylon or Metal Cloth

- Prompt Delivery anywhere in U. S.
- Absolutely TAUT screens for perfect registry to last impression of run.
- Perfect reproduction of your black and white drawing.
- Prepared by experienced technicians.

PERFECT FOR

TV SETS NAME PLATES TOYS DIALS
ASH TRAYS CHASSIS PRINTED CIRCUITRY

Use NAZ-DAR Weatherproof Silk Screen Enamel

Uniformly high opacity

Write today for screen and ink information, Dept. P-6.

The NAZ-DAR Company
461 Milwaukee Ave. • Chicago 10, Ill.
inks • varnishes • lacquers • silks
screen plates • squeegees • films

For more data circle 361 on Reader Service Card

TRUE BRITE BRASS SOLUTION

A foolproof solution which has been in use over 6 years in light and heavy production.

- Ready To Use—Just Add Water
- No Variance in Color
- Trouble-Free—Little Supervision Needed
- Low Cost—Additions only once a day

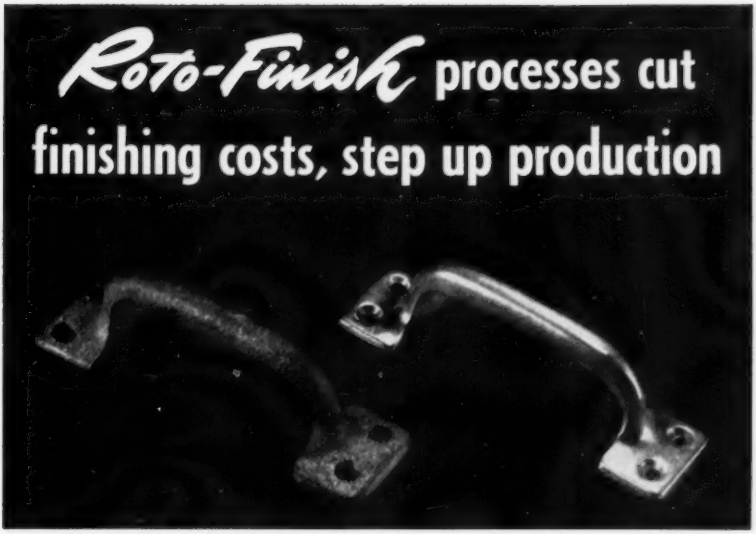
Available in a variety of colors. Will match your sample.

Write for technical bulletin and prices.

TRUE BRITE CHEMICAL PRODUCTS CO.
Box 31, Oakville, Conn.

For more data circle 362 on Reader Service Card

Roto-Finish processes cut finishing costs, step up production



Savings on deburring, descaling, grinding, polishing, coloring and surface improvement by Roto-Finish barrel finishing processes are tremendous. Expensive hand finishing methods can be eliminated.

Roto-Finish Chips, Compounds and Machines are of the highest quality—Roto-Finish has never sacrificed quality for the sake of price. A continuous program of improvement of processes and products gives you better performance.

Roto-Finish guarantees results—There is no costly trial and error involved in the purchase of Roto-Finish equipment. You submit unfinished parts to Roto-Finish along with a finished sample and a description of the finish you require. These sample parts are processed by Roto-Finish to determine the right process to do the job. Roto-Finish guarantees to reproduce the same results in your plant, using Roto-Finish processes, that are achieved in sample processing.

Send for this Free Technical Data Folder

Roto-Finish COMPANY

3704 Milham Rd., Kalamazoo, Mich.

P. O. Box 988
Phone FI 3-5578

For more data circle **363** on Reader Service Card

the cleaning fluid. One end of this type of transducer is fitted with a standard pipe thread (¾ inch) into which a stainless steel adapter is screwed. It permits the insertion of a Teflon-lined flexible stainless steel sleeve, carrying the "hot" lead from the transducer to a junction box on the outside of the tank. Shorting or grounding of the high-voltage lead or accidental damage to it is unlikely because several layers of Teflon insulation and the braided steel sleeve protect it from abuse.

The transducers are available in many sizes, with effective cleaning areas for a single unit ranging from 3 by 5⅜ inches up to 6 by 14 inches. When several transducers are connected in parallel, up to 5 square feet of transducer area can be driven from one Branson ultrasonic generator.

For more data circle **12** on Reader Service Card

★ ★ ★

Spray Decorating Machine

A spray painting machine developed by Conforming Matrix Corporation facilitates painting of small parts, such as jewelry.

The rotary mask fixture mechanism used on this model makes possible increased efficiency. The entire revolving plate which holds the masks intact is removed from the machine and placed in the mask washer. Another plate holding masks is used while the first is being cleaned.

The entire machine is air operated. It is furnished complete with atomizing and machine air regulators and gages and an air-timer device. The air regulator maintains constant air pressure to the timer. Exactly the same amount of paint is applied to every part, regardless of rate of operation.

Installation of the machine requires only the attachment of air lines, paint pressure tank and an exhaust system.

Conforming Matrix Automatic Spray Painting Machine. Pieces of jewelry at lower left are now being painted using this machine.

Descriptive literature is available from Conforming Matrix Corp., 356 Toledo Factories Bldg., Toledo 2, Ohio.

For more data circle **13** on Reader Service Card

★ ★ ★

Cadmium Brightener

Cad-Kote, a cadmium brightener, has been introduced by Smoothex, Inc., 10705 Briggs Rd., Cleveland 11, Ohio.

The product is said to have several advantageous features: it gives consistently bright deposits; it produces a high lustre; plating speed is improved, and plating time is reduced, because no subsequent bright dip treatment is required.

Cad-Kote protects iron from corrosion in two ways: the coating itself protects the metal by covering it, and

For more data on advertisement on opposite page circle **364** on Reader Service Card——→

CLINCO

PIONEERING QUALITY INDUSTRIAL FINISHES SINCE 1928

QUALITY–

"Excellence of character; natural superiority."

(Webster's New International Dictionary)

CLINTON Quality conforms to this definition–

TRY US AND SEE!

Customer Service is Our No. 1 Concern

THE CLINTON COMPANY

1210 ELSTON AVE. • CHICAGO 22, ILL.

since cadmium is anodic to iron, it acts as a sacrificial metal if the iron is exposed—that is, the cadmium itself must corrode before the iron can be attacked.

Cadmium plating also is an excellent method of protecting iron that comes in contact with aluminum. Since the electropotential of cadmium is close to that of iron, galvanic corrosion is lessened, and the iron is well protected.

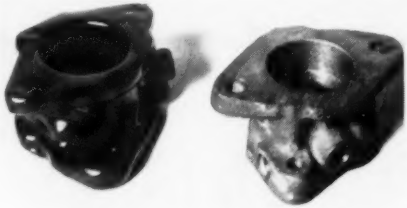
Cad-Kote is said to have a wide plating range for both barrel and still plating. Although Cad-Kote performs best in a new bath, it may be used in an existing bath with excellent results, the manufacturer states.

This brightener is easily controlled, and will plate in deep recesses with good results, it is stated.

For more data circle **14** on Reader Service Card

Plastisol Coating

A strip-off plastisol coating for the temporary protection of metal parts has been introduced by the Chemical Processing Division of Auburn Button Works, Inc., Auburn, New York. This material is applied by heating the



Cast iron parts after coating (at left) and after material has been stripped off (at right). Coating bridges all holes and gets into every contour. It also provides a thick rounded bumper for sharp outer edges.

FINER FILTERING means LESS REJECTS
DO YOU know EXACTLY WHAT

ALSOP

HAS to offer in the way of totally clean solution at all times — and do you know what that means—MOST of your troubles are eliminated before they start.

Write Today For New Catalog

ALSOP ENGINEERING CORP.
1207 Keen St. Milldale, Connecticut

For more data circle **365** on Reader Service Card

WHY

DO YOU ALLOW RAPID WEAR ON YOUR BUFFING FIXTURES

when they can be *FUSECOATED* to last up to a year or more? We specialize in protective coatings for fixtures of all kinds and would like to add your name to our long list of regular customers.

Write

for our general information folder or send sample fixture or drawing of same to be FUSECOATED.

Fusion Metal Coating Co.
25493 West 8 Mile Road
Detroit 19, Mich.

For more data circle **366** on Reader Service Card

NORTHWEST

LEADS THE WAY WITH CHEMICALS FOR USE WITH

ALUMINUM

If you work with aluminum you'll be interested in Northwest's outstanding line of chemicals for use with modern alloys. It will pay you to investigate:

- **ALKALUME CLEANERS**— A full line of cleaners and etching compounds especially formulated for use on aluminum alloys prior to plating, anodizing, painting or welding.
- **ALKALUME PRE-PLATE**— An especially effective zincate bath for preparing aluminum for plating.
- **ACID SOLVENT EMULSION CLEANER No. 1**— An effective cleaner for fabricated aluminum parts before finishing.
- **DRAWING AND STAMPING COMPOUNDS FOR ALUMINUM**—

Write for detailed literature.

REMEMBER!

"Your cost per finished article is the true cost of your cleaner."

NORTHWEST CHEMICAL CO.

9310 ROSELAWN DETROIT 4, MICH.

For more data circle **367** on Reader Service Card

parts and dipping them in the plastisol formulation.

The plastisol can be peeled off by hand. It protects metal parts from rust, corrosion, dirt or damage while in storage or transport.

The controllable coating thickness provided by the plastisol formulation makes it excellent for use on all types of precision instruments and parts having sharp edges which may be damaged in handling or shipping, such as bits, sawblades, chisels, gear teeth, knives, plane blades, and surgical instruments.

The plastisol coating provides several kinds of protection. First it is resilient, which reduces shock and breakage. It resists nearly all chemicals, including most acids, alkalis, and solvents. In addition, it will not absorb moisture. Plastisols have high thermal and electrical insulating qualities. They are unaffected by cold or hot weather. They resist mold, mildew, salt air and water, and are not deteriorated by time or exposure.

For further information write the Chemical Division, Auburn Button Works, Inc., Auburn, New York.

For more data circle 15 on Reader Service Card

★ ★ ★

Paint Pump

An air-powered pump that mixes and pumps paints direct from original 1-5 gallon shipping pails, without pressurizing the container, has been announced by Gray Company, Inc., Minneapolis, Minnesota.

This Graco pump, called the "Redi-Spray" is a completely self-contained

To page 114→

Sethco *Filters Fast*

FROM
START
SELF PRIMING
instant filtration
TO
FINISH
Automatic Backwash Reversal Switch

LSIN-20V

Models equipped with corrosive resistant alloys and materials for every electroplating and industrial solution from pH 0 to pH 14. Removes particles down to one micron in size.

Sethco Mfg. Co.
2292 Babylon Turnpike, Merrick, L.I., N.Y. MAyfair 3-4220

For more data circle 368 on Reader Service Card

For Platers, Silversmiths, Jewelry Mfgrs., Makers of Watches, Clocks and Electronics and other metal finishers.
Supplied in straight or crimped brass, steel, nickel silver or stainless steel wire in sizes .0025 to .006 and in bristle, fibre or Nylon. Special sizes and shapes to order.
Write (Dep't. P) on your letterhead for catalog and price list

DIXON & RIPPEL, INC. Box 116 Saugerties, N. Y.
ESTABLISHED 1856

For more data circle 369 on Reader Service Card

NEW SHAPED, EXTRUDED APW SILVER ANODES

STANDARD SHAPES

CONTROLLED GRAIN SIZE: **APW EXTRUSION PROCESS*** **controls grain size within definite limits — minimizes sheddings**

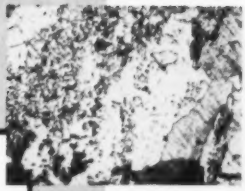
These scientifically shaped anodes retain 80% of original active surface area after 85% by weight has been plated off!

Costs are lowered by prolonged anode life, minimized polarization and less silver scrap to be refined.

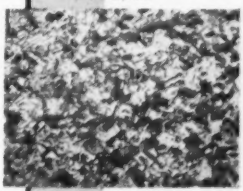
In addition, the APW Extrusion Process controls grain size within definite ideal limits so that corrosion is smooth and uniform. Electrodeposits are *consistently* smooth. Shedding is virtually eliminated. Rejects are a comparative rarity!

We are anxious that the silver you buy in anodes is used most efficiently and economically. Special anode shapes will be engineered to meet your particular plating bath conditions. Call or write for a representative. We'll be glad to assist with your plating problems.

*Pat. Pending



ROLLED FLAT PLATE ANODE SECTION: This Photomicrograph shows highly irregular, uncontrolled grain size—a major cause of shedding and resultant rough electrodeposits.



APW EXTRUDED ANODE SECTION: Small, fully controlled regularity of grain size promotes uniform corrosion, smoothest electrodeposits, less rejects.

THE AMERICAN PLATINUM WORKS

231 NEW JERSEY RAILROAD AVENUE • NEWARK 5, NEW JERSEY

APW

ENGELHARD INDUSTRIES

For more data circle 370 on Reader Service Card

SPECIAL REPORTS ON FINISHING NON-FERROUS METALS

NUMBER I— Decorative, Corrosion-Resistant Finishing with Iridite

Chromate conversion coatings are well known and accepted throughout industry as an economical means of providing corrosion protection, a decorative finish or a good paint base for non-ferrous metals. However, continued developments are so rapid and widespread that many manufacturers may not be completely aware of the breadth of application of this type of finish. Hence, this digest of current information; to bring you up to date on the many ways in which you can combine salable appearance with durability in one finish at a competitive price advantage. Report II on paint base, corrosion-resistant finishes and Report III on chemically polished, corrosion-resistant finishes are available on request.

First, as a basis for this discussion, a "decorative" finish is considered as any chromate film that is used as a final finish in itself. It may be truly decorative in that its sole purpose is to enhance the beauty of the product. For example, a bright chrome-like finish or a pleasing bronze appearance are among the many effects that can be obtained. It may be functionally decorative in that it reduces reflectivity for camouflage purposes or provides a means of color-coding parts. But, in all cases, the Iridite films protect the metal against corrosive attack.

Iridite finishes are now available for all commercial forms of the more commonly used non-ferrous metals, including zinc, cadmium, aluminum, magnesium, silver, copper, brass and bronze. These films can produce a wide variety of pleasing appearances. The basic colors of the Iridite coatings are grouped below by metals.

ZINC and CADMIUM: Metallic bright, light iridescent, iridescent yellow, bronze, olive drab.

COPPER, BRASS, BRONZE: Metallic bright, yellow.

ALUMINUM ALLOYS: Clear, iridescent yellow, brown.

MAGNESIUM ALLOYS: Light brown, dark brown, black.

SILVER: Metallic bright.

In addition, many films can be modified by bleaching or by dyeing. Among the dye colors available are various shades of red, yellow, green, blue or black.

WHAT IS IRIDITE®?

Briefly, Iridite is the tradename for a specialized line of chromate conversion finishes. They are generally applied by dip, some by brush or spray, at or near room temperature, with automatic equipment or manual finishing facilities. During application, a chemical reaction occurs that produces a thin (.00002" max.) gel-like, complex chromate film of a non-porous nature on the surface of the metal. This film is an integral part of the metal itself, thus cannot flake, chip or peel. No special equipment, exhaust systems or specially trained personnel are required.

Depending upon the metal and the Iridite used, corrosion resistance of clear and bright films ranges from mild passivity to as high as 500 hours in salt-spray; on heavier dark films, salt-spray resistance ranges from approx. 100 to 1000 hours.

It is this combination of decorative and corrosion resistant properties that accounts for the widening use of Iridite finishes.

For example, Iridites #4-73 and #4-75 (Cast-Zinc-Brite) make possible for the first time, a combination of lustrous chemical polishing of the as-cast surface of zinc die castings and good resistance to corrosion. Further, in many cases, sizeable savings in the cost of buffing and electroplating are realized.

On many steel parts, a simple system of zinc or cadmium plate and bright Iridite is used instead of more costly electroplated finishes to provide a bright, decorative and protective finish with tremendous savings in material, equipment and labor.

In finishing aluminum, where corrosion resistance or paint adherence is the prime consideration, the aircraft industry has all but abandoned the anodizing process in favor of recently developed chromate conversion coatings, among them Iridite #14 and #14-2 (Al-Coat). These formulations and their method of application can be varied to retain the original metallic appearance while providing acceptable corrosion resistance, or to produce a fully colored brown finish that offers exceptional corrosion protection. Again, time and manpower savings are astounding—one company saved at least $15,000 a year on maintenance of racks alone and another $40,000 on materials and labor in only nine months. In addition, of course, hundreds of thousands of dollars are saved by eliminating the need for expenditures for generators, heating equipment and racks.

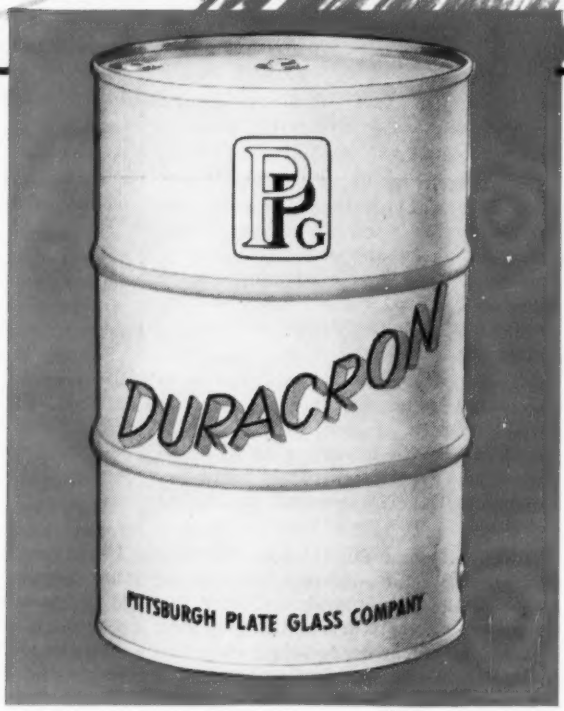
Iridites are widely approved under both Armed Services and industrial specifications because of performance, low cost and savings of materials and equipment.

In planning or designing, you should consider the many other characteristics of Iridite finishes which may enter into the specific problem. In addition to having decorative and protective functions, these chromate coatings form an excellent base for organic finishes and bonding compounds. They have low electrical resistance. Some can be soldered and welded. The film itself does not affect the dimensional stability of close tolerance parts.

You can see then, that with the many factors to be considered, selection of the Iridite best suited to your product requires the services of a specialist. That's why Allied maintains a staff of competent Field Engineers—to help you select the Iridite to make your installation most efficient in improving the quality of your product. You'll find your Allied Field Engineer listed under "Plating Supplies" in your classified telephone book. Or, write direct and tell us your problem. Complete literature and data, as well as sample part processing, is available. Allied Research Products, Inc., 4004-06 E. Monument Street, Baltimore 5, Maryland.

For more data circle 371 on Reader Service Card

DURA



PITTSBURGH PAINTS

PAINTS • GLASS • CHEMICALS • BRUSHES • PLASTICS • FIBER GLAS

PITTSBURGH PLATE GLASS COMPANY

IN CANADA: CANADIAN PITTSBURGH INDUSTRIES LIMITED

Thermo-Setting Acrylic Enamel

Sets a new standard for industrial finishes in toughness, mar resistance and durability

• **Pittsburgh's new DURACRON** is a revolutionary departure from today's baked enamels. It is a basically new chemical composition developed for the finishing of refrigerators, home laundry equipment, ranges and air conditioning units.

• **It has superior adhesion** to bare metal or primer. It is remarkably tough and durable either as a one-coat enamel or over primer. It retains color and gloss for prolonged periods at temperatures up to 400°F. DURACRON also provides greater resistance to detergents, will not show stains from grease, fruits, mustard, etc. It withstands effects of salt spray, humidity and other corrosive atmosphere. In short, it's a sanitary, taste-free, mar-proof liner for food cabinets.

• **New DURACRON** can also be used advantageously on many other products to improve performance of enamels now used. We'll gladly provide you with additional information. Mail coupon below to Pittsburgh Plate Glass Company, Industrial Finishes Division, 1 Gateway Center, Pittsburgh, Pa.

Pittsburgh Plate Glass Company, Industrial Sales Division,
1 Gateway Center, Pittsburgh, Pa.

Gentlemen: Please send me additional information about your revolutionary new DURACRON.

Name_____

Company_____

Address_____

City_____ County_____ State_____

For more data circle **372** on Reader Service Card

Graco Pump: where many colors are used

unit that has no gears or moving seals. It operates on the same principle as an automobile fuel pump, instantly supplying fluid when the spray gun is opened and shutting off when the gun is closed.

Designed specifically for use where numerous short-run colors are used, this Graco unit requires no bleeding; color changing can be done quickly. There is never any pressure exerted on, or in, the container.

For further information about the "Redi-Spray," write Gray Company, Inc., 1043 Sibley Street N.E., Minneapolis 13, Minn.

For more data circle **16** on Reader Service Card

★ ★ ★

Chromium Plating Bath Additive

A liquid addition agent for use in chromium plating baths, recently introduced by Wagner Bros., Inc., 400 Midland, Detroit, Mich., is said to reduce waste of chromic acid and improve plant safety by reducing fumes discharged into the air. In addition, this additive increases covering power of the bath, the manufacturer states.

Called Krome-On, the additive is said to oxidize into a complex mixture during electrolysis, which enables the plating bath to develop greater covering power.

By reducing surface tension of the bath and at the same time reducing the bubble size of hydrogen and oxygen being liberated, this material aids in decreasing spray, dragout and flue loss. Since spray released into the air

Randolph

EXPERIENCE and RESEARCH MEAN

BETTER FINISHES for your products

LACQUERS • ENAMELS
DOPES • THINNERS
CLEAR METAL FINISHES
COLORED LACQUERS
CLEAR S.G. FOR METAL
TEXTURE ENAMELS
SPECIALIZED PRODUCTION FINISHES
AIRCRAFT FINISHES

Depend on us for Prompt Delivery

RANDOLPH PRODUCTS CO.
CARLSTADT, N. J.

For more data circle **373** on Reader Service Card

NOTICE!

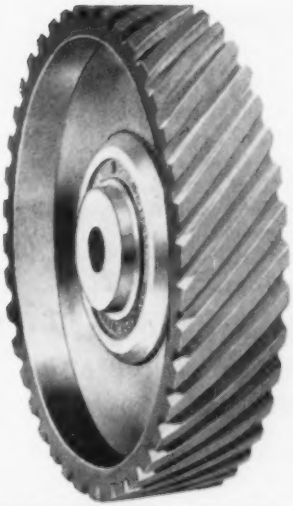
Effective July 30, 1957 the tuition fee for ELECTROPLATING KNOW HOW will be advanced from $125 to $150. If you plan to enroll in this outstanding course which has helped hundreds of platers, foremen and chemists to advancement and is now standard training procedure in many of the world's largest metal finishing plants, do so NOW. *Save yourself $25 by enrolling at once!* JOSEPH P. KUSHNER, ELECTROPLATING SCHOOL, 115 BROAD ST., STROUDSBURG 30F, PA.

For more data circle **374** on Reader Service Card

A BETTER BACK-UP WHEEL

R57

FOR YOUR ABRASIVE BELTS



45°
Standard
For Stock
Removal

AVAILABLE NOW IN POPULAR 14" DIAMETER SIZES AT BIG SAVINGS

You can get the new R57 RUBBER CONTACT WHEELS at lower prices in 14" Diameter sizes*** due to newly developed production techniques. These new wheels have all the well-known features of the R50 and R54 models—LONGER BELT LIFE . . . OIL RESISTANT RUBBER . . . WET OR DRY OPERATION . . . HEAT DISSIPATION . . . MAXIMUM SAFETY . . . other features. And what's more these wheels have a 30% trade-in value.

***The new R57 and the R50 and R54 contact wheels are available in many popular sizes . . . ½" to 22" DIAMETERS in WIDTHS from 1" to 6". Other wheels made to your specifications.

14"

TYPE	WIDTH OF FACE 1"	2"	3"	4"
PLAIN	32.00	34.00	36.00	38.00
SERRATED	37.00	39.00	42.00	44.00

AVAILABLE IN PLAIN OR SERRATED FACE IN ALL DUROMETERS

Write for Details

DElta 6-8900

A WHEEL FOR EVERY OPERATION

45° Scoop Tooth — Aggressive Stock Removal

Slit Serration — Aggressive Contact Work

Cosmo Expander — Backstand Idler Not Needed

"X" Serration — Moderate Contour Work

Specializing in Contact Wheels and Industrial and Printers Rolls

CHICAGO RUBBER COMPANY, INC.

651 MARKET STREET • WAUKEGAN, ILLINOIS

For more data circle **375** on Reader Service Card

is reduced, the health hazard is also alleviated, the manufacturer reports.

An additional advantage of the bath, Wagner reports, is that it does not disturb the sulfate ratio in the chrome bath, nor does it disturb other catalyst radicals.

For more data circle **17** on Reader Service Card

QUALITY EQUIPMENT

PRICED RIGHT AND READY FOR IMMEDIATE SHIPMENT

BUFFING AND POLISHING EQUIPMENT

100 Hammond—Divine—U. S. Electric—Holland — Standard Electric — L'Hommedieu single speed and variable speed buffing and polishing machines. 1 to 20 HP.

6 Rotary Machines: Hammond—Acme—Packermatic.

Complete buffing systems for above machines, including hoods, cyclones, dust boxes, pipes, motors and blowers; various sizes.

Semi-automatic machines: Buffalo—Hammond Acme—Divine—Production.

ALL EQUIPMENT IN STOCK
INSPECTION INVITED

all quoted subject to prior sale.

J. HOLLAND & SONS, INC.

485 KEAP ST., B'KLYN, N. Y., STagg 2-2022

For more data circle **376** on Reader Service Card

Portable Solution Filter

A portable liquid-clarification filter equipped with a by-pass valve that allows the unit to be used for solution transfer has been introduced by Sel-Rex Corporation, Nutley, N. J.

Designated Model BS-3, this filter incorporates a number of desirable features. It is equipped with an annular stainless steel mesh element that filters through both the inner and outer surfaces. This type of element is said to give increased filtering area. The filtering element is attached to the tank cover; thus it can be lifted out easily for cleaning.

Sel-Rex Model BS-3 Filter Pump: by-pass valve allows use as transfer pump

The Sel-Rex filter can be converted quickly for use with a porous stone membrane in special applications.

All working parts of the filter are suspended beneath the tank so as to protect them from dirt and drippings.

VINYL PLASTISOL COATINGS

* APPROVED SOURCE

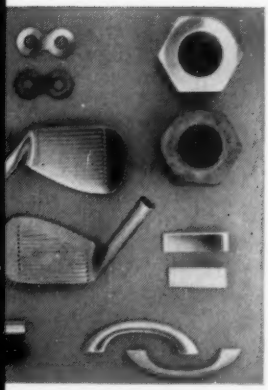
- **MATERIAL HANDLING**—TOUGH • DURABLE • NOT AFFECTED BY TRICHLOR.
- **TUMBLING BARRELS**—INEXPENSIVE • SEAMLESS • LONG LIFE LININGS
- **PLATING EQP'T.**—VERY DURABLE • EXCELLENT CORROSION RESISTANCE
- **ELECTRICAL INSULATION**—APPROX. DIELECTRIC VALUE 400V/MIL.

FOR FURTHER INFORMATION: **MARATHON METAL PRODUCTS, INC.**

20 FRONT ST. **MARATHON, N. Y.**

For more data circle **377** on Reader Service Card

For more data on advertisement on opposite page circle **378** on Reader Service Card →



Before and After

SEND SAMPLES OF PARTS for FREE proof a RANSOHOFF *Automatic Media Return Tumbling Barrel* can Save You Time and Money— Give Better Results!

widely adaptable for
• CLEANING • DEBURRING
• DESCALING • BURNISHING
Media is retained in drum, eliminating costly hand separation and loss of media.

Mass cleaning and finishing of stamped, forged or cast parts in this RANSOHOFF Automatic Tumbling Barrel cuts hours of time and dollars of cost.

The Automatic Media Return Tumbling Barrel performs all operations, including cleaning, deburring, descaling and media separating all within the drum, without manual handling, on an automatic time cycle.

Expertly engineered, compactly designed and ruggedly built, a RANSOHOFF Automatic Media Return Tumbling Barrel may allow mass cleaning and finishing of *your* parts with tremendous savings in time, labor and cost.

Send samples of your parts for a free evaluation.

RANSOHOFF, INC., 610 N. FIFTH ST., HAMILTON, OHIO

Ransohoff

An old name... the newest ideas

The entire unit is mounted on wheels so that it can be moved where it is needed.

The unit is available in various materials of construction, to suit the application.

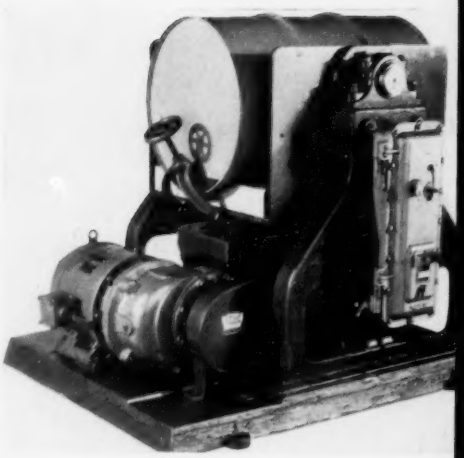
For more data circle **18** on Reader Service Card

★ ★ ★

Paint Mixer

Equipment for shaking 55-gallon drums of paint in order to restore the consistency of the paint has been introduced by Miracle Paint Rejuvenator Co., 127 E. 9th St., St. Paul 1, Minnesota.

By using this machine, paint can be restored to its original viscosity without opening the drum. Called the Miracle Paint Rejuvenator, the apparatus will restore lacquers, enamels and synthetics in one to three minutes treatment time per gallon of material, the manufacturer states.



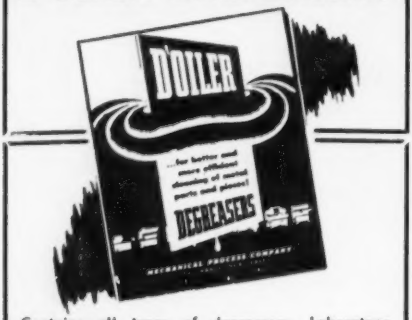
Paint Rejuvenator for 55-gallon drums

Since the drum contents are treated without opening the sealed package, there is no fire hazard, and loss by evaporation is avoided, as is the danger of foreign substances entering the paint.

Further data on these 55-gallon drum-type Rejuvenators is available from Miracle Paint Rejuvenator Co., 127 E. Ninth St., St. Paul 1, Minn.

For more data circle **19** on Reader Service Card

Send for this folder on D'OILER DEGREASERS



Contains all types of degreasers: Laboratory, Two-Dip, Three-Dip, Vapor Spray, Barrel Type, Automatic, Semi-Automatic, Driers, Stills and Specials.
When the job needs a degreaser . . . there's a D'OILER for the job.

mechanical process co., inc.
392 VALLEY ST. • SOUTH ORANGE, N. J.

For more data circle **379** on Reader Service Card

Telephone collect for free brochure on
STRIPPING COPPER
with
McKeon's "Liquid Sulphur"
Economical, fast, non-electrolytic.
Sulphur Products Co., Inc.
McKeon Bldg., 621 W. Pittsburgh St., Greensburg, Pa.

For more data circle **380** on Reader Service Card

Shoot your chrome questions at Diamond

Let DIAMOND's technical specialists zero in on your chrome-plating problems. These specialists are ready and able to handle your questions—quickly and completely. Their service is free.

In making chromic acid, DIAMOND controls quality from start to finish. DIAMOND experience begins with importing the chrome ore and making the soda ash. It includes *every step* through production and delivery, right up to standing by your side, if you wish, to help you get top-quality plating results consistently, economically.

DIAMOND facilities—two chromic acid plants and nine warehouses and sales offices across the country—assure you uninterrupted supply. DIAMOND ALKALI COMPANY, 300 Union Commerce Building, Cleveland 14, Ohio.

Diamond Chemicals

For more data circle **381** on Reader Service Card

Heat-Resistant Finishes

A silicone resin developed by Dow Corning Corporation, identified as Dow Corning 808 Resin, provides greater gloss retention after long exposure to high temperatures, the manufacturer states.

A typical formulation pigmented with titanium dioxide (P/B 60/100) and thinned with xylene, retains its original 84 per cent gloss rating after 100 hours at 482 deg. F. When subjected to 572 deg. F. for 400 hours, or to 482 deg. F. for over 2,500 hours, its gloss rating drops, but only to 70 pct.

Cured films based on Dow Corning 808 are non-yellowing and exhibit excellent adhesion, flexibility and resistance to moisture and many common chemicals. Pigment wetting characteristics are excellent, it is stated. Blending, application, and curing methods are substantially unchanged.

Developed primarily for use in formulating white and light-colored space-heater and appliance finishes, Dow Corning 808 is currently available in commercial quantities. Experimental samples and further information are available from Dow Corning Corp., Dept. 5016, Midland, Mich.

For more data circle **20** on Reader Service Card

★ ★ ★

Buffing Composition

Slo-slake, a lime buffing composition recently developed by Frederic B. Stevens, Inc., shows excellent resistance to slaking after exposure to air, the manufacturer states.

Stevens says that use of Slo-slake will save compound, as less composition will be discarded because of slake waste. Cleaning is simplified with constant use of the unslaked composition. Constant quality, excellent cut, color and wheel performance are other advantages of the product. Stevens offers an entire line of lime compositions with Slo-slake advantages.

Catalog No. 51 contains a complete list of Stevens' buffing and polishing compositions. A free sample of Slo-slake is available. Both may be obtained by writing Frederic B. Stevens, Inc., 1804 - 18th St., Detroit 16, Mich.

For more data circle **21** on Reader Service Card

★ ★ ★

Pearlescent Finish

Mearl Corporation, New York City, has announced the introduction of Nacromer YNC, a synthetic which produces a high lustre.

In concentrated paste form, Nacromer YNC mixes easily with most coating materials. It can be applied by spray, brush, or dip to wood, metal, plastic, glass, leather, paper, and many other materials. No additional equipment or operations are required.

In addition to a natural pearl effect, Nacromer YNC provides an almost

To page 124→

For information on where to buy finishing equipment, materials, processes, refer to the 1957

Products Finishing Directory

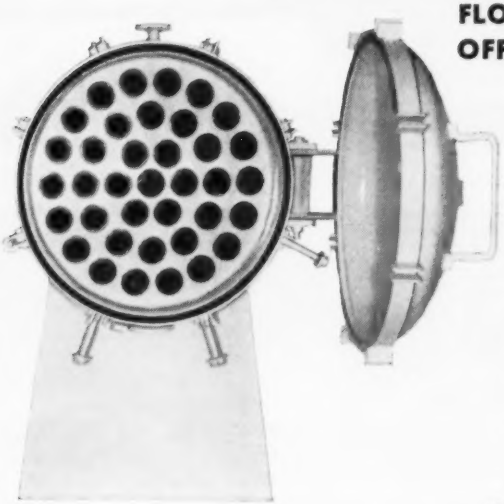
YOU WILL STOP USING PIPE COILS

as soon as you know the many advantages of the Dean Thermo-Panel Coil which is NOT a coil at all. It TAKES THE PLACE of old-style pipe coils. See our ad. in last month's issue of this journal. Ask for data.

DEAN THERMO-PANEL COIL DIVISION
DEAN PRODUCTS, INC. 622 Franklin Ave.
BROOKLYN 38, N. Y. Tel. STerling 9-5400

For more data circle **382** on Reader Service Card

New!...TUBULAR FILTERS
By INDUSTRIAL



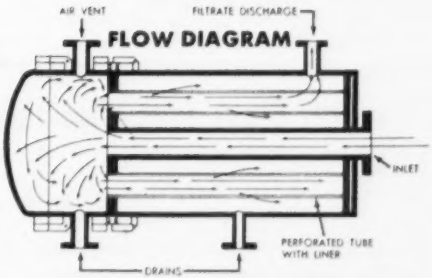
FLOW FROM INSIDE TUBE OFFERS NEW CONVENIENCE

- ★ Unequaled simplicity of maintenance.
- ★ Solids can be recovered in dry form.
- ★ Liners are easy to replace and inexpensive.
- ★ Ideal for intermittent or continuous operation.
- ★ Chamber can be emptied without losing cake.
- ★ No unfiltered "heel."
- ★ Can be used with or without pre-coat.
- ★ Ideal for polishing . . . as a trap filter . . . and as a scavenger for larger filters.

NEW SIMPLIFIED OPERATION

The filter is prepared for use by simply rolling flat sheets of filter paper and inserting them in the tubes, which are designed to force the paper snugly against the tube wall.

EASY TO CLEAN . . . Filter papers are simply withdrawn and replaced. Even the tubes are easy to remove, held in place by a simple rubber O-Ring. Except for the cover there are no nuts and bolts to handle.



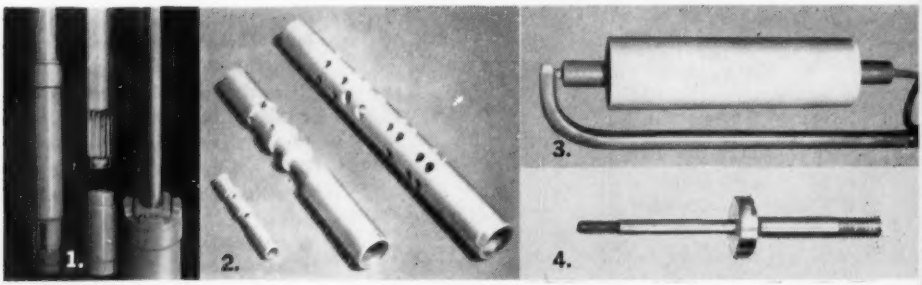
FOR FULL DETAILS
WRITE FOR BULLETIN 123-1155

Industrial
INDUSTRIAL
FILTER & PUMP MFG. CO.
5904 OGDEN AVENUE • CHICAGO 50, ILLINOIS

For more data circle **383** on Reader Service Card

News about UNICHROME Trade Mark

New type chromium



A few of the applications where Unichrome Crack-Free Chromium can be used to protect against corrosion, heat, wear. (1) Washer shafts and sleeve; hydraulic ram (2) Heater nozzles. (3) Roller. (4) Component part of power producing mechanisms.

Why Crack-Free Chromium gives superior finish

Regular chromium plate develops a network of cracks as it is deposited. Through these defects, corrosives reach the underlying metal. Deposits from the Unichrome Crack-Free Chromium Plating Process remain structurally sound and continuous. This explains the wide difference in degree of corrosion protection obtained.

OTHER PROPERTIES

Crack-Free Chromium also provides:

1. Increased ductility, so that expansion and contraction cause no cracks.

2. Improved non-galling, non-seizing properties.

3. Low friction, resistance to wear.

4. Hardness (500 to 700 Knoop).

5. Excellent leveling action to help cover surface irregularities and reduce grinding needs.

6. Protection to the base metal without undercoats.

7. A satin matte *decorative* finish that can be applied directly to zinc die casting as well as steel. It buffs readily to high luster.

Bulletin CFC-2 gives more details on self-regulation and other features.

plate improves products

Difficult problems created by heat, wear, corrosion solved by Crack-Free Chromium

Field reports confirm that Unichrome Crack-Free Chromium is truly a new type of chromium plate with valuable characteristics. It is being used in applications once thought impractical for chromium or other deposits.

IMPROVING HYDRAULIC SYSTEMS

On hydraulic rams, power steering shafts, hydraulic jacks being plated with Crack-Free Chromium, relatively thin deposits protect against corrosion, reduce friction and wear. Where aqueous hydraulic fluid penetrated the cracks in .003 to .005" of ordinary chromium, a .0009" Crack-Free deposit stopped it.

Washing machine and typewriter parts, spline shafts, piston rings, relay armatures are other applications where corrosion problems have been solved.

COMBATING THERMAL SHOCK

Spouts for pouring 2250°F. molten glass into molds last four times longer when plated with Crack-Free Chromium instead of ordinary chromium.

Increased ductility combines with resistance to thermal shock for other benefits. Crack-Free Chromium permits faster, deeper grinding cuts without fracture. On renewed transmission cams, this plate didn't fracture in service, whereas ordinary chromium did on 30% to 40% of the cams.

SLOWING DOWN WEAR

Crack-Free Chromium enables one user to increase life of textile machine rolls by 400% while cutting chromium deposit thickness 95%. It has also increased service life of drills, taps and reamers by 300%, compared with ordinary chromium.

Send for Bulletin CFC-2.

Unichrome is a trademark of Metal & Thermit Corp.

METAL & THERMIT
CORPORATION

General Offices: Rahway, New Jersey
Pittsburgh • Atlanta • Detroit
East Chicago • Los Angeles
In Canada: Metal & Thermit—United Chromium of Canada, Limited, Rexdale, Ont.

For more data circle **384** on Reader Service Card

unlimited range of lustrous effects by the addition of transparent pigments or dyes. It is being used to obtain gunmetal, gold and silver finishes.

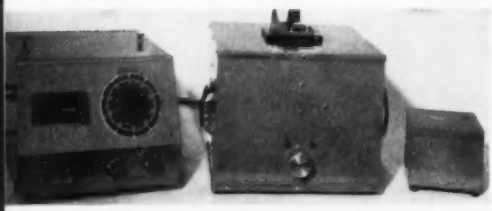
Demonstration samples showing Nacromer YNC coatings on wood, metal, plastic and other materials are available. Write Dept. C, The Mearl Corp., 124 East 40th St., New York 16, N. Y.

For more data circle **22** on Reader Service Card

★ ★ ★

Reflectance Meter

An automatic brightness and reflectance meter has been introduced by Gardner Laboratory, Inc., Bethesda 14, Md.



Automatic Brightness and Reflectance Meter

The instrument is composed of an exposure head and a measurement unit. The exposure head is designed so that samples may be checked in either a vertical or horizontal position.

Illumination is provided by a G.E. 1209 Lamp. By means of four lenses, the light beams are directed to the sample by four mirrors to illuminate in four directions. This method produces equal intensity on the sample from all directions, and thereby gives an average reading over the entire exposed specimen.

Using this optical arrangement, it is possible to increase the intensity of the light reaching the test cells by four times that normally afforded with one lamp. Thus it is even possible to measure the differences in lightness or brightness between samples that have a reflectance below 15 per cent.

Further information on this instrument can be obtained from Gardner Laboratory, Inc., P. O. Box 5728 PF, Bethesda 14, Md.

For more data circle **23** on Reader Service Card

★ ★ ★

Alkaline Deruster

Wyandotte Chemicals Corporation, Wyandotte, Mich., has announced Ferlon, an alkaline deruster that is said to give fast cleaning action without injury to the metal. Made for use in tanks, with or without current, Ferlon removes rust, oils, grease, scale, paint and smut. It is recommended as a pre-plate cleaner.

Each drum of this material contains a bottle of detergent and rinse pro-

PROTECTION Plus HOLDING POWER

If you want to upgrade the finish of your metal products, find out about Vinsynite, the stable, wash-primer type pretreatment. Easily-applied to ANY metal by brush, spray or dip, its use requires no special equipment or controls. Promotes resistance to corrosion, increases adhesion of topcoats, improves appearance. Write for literature and technical data.

Protective Coatings Since 1847

Specialty Coatings, Inc. division

THOMPSON and COMPANY

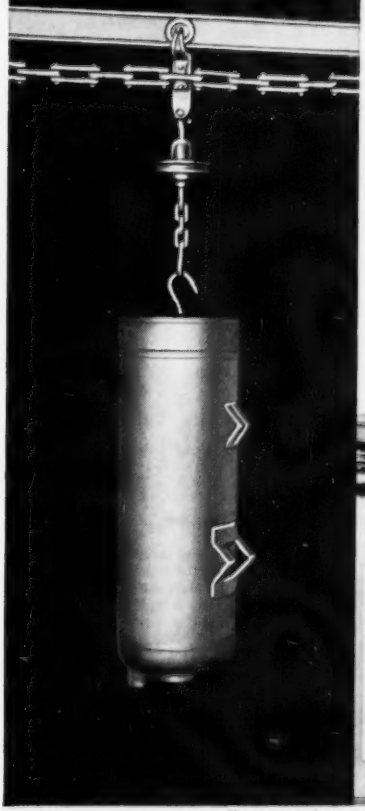
1010 Allegheny Ave., Oakmont, Pa.

For more data circle **385** on Reader Service Card

PROBLEM:

Finish

JATO cases inside and out . . . . automatically



ANSWER:

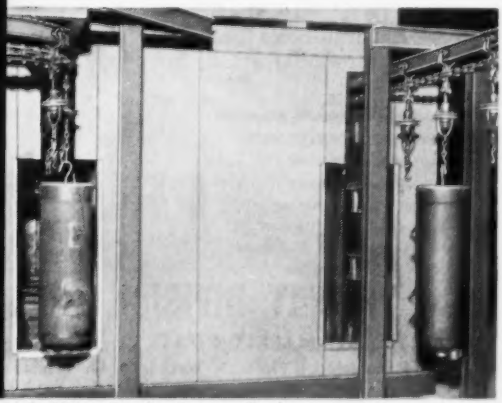
CALL IN

Cincinnati

JATO cases at Phillips Petroleum move continuously from cleaning through painting to the bake oven . . . hang vertically on indexing conveyor to rotate as they are painted—inside and out—in just two automatic operations.

Let CINCINNATI expedite your cleaning and finishing. For free survey, write today!

CINCINNATI
CLEANING and FINISHING
MACHINERY COMPANY
2008 Hageman St., Cincinnati 41, Ohio



For more data circle **386** on Reader Service Card

Wyandotte Ferlon cleans and derusts, will not injure sound metal. Each drum includes a bottle of Detergent and Rinse Promoter.

moter. This permits optional addition of the rinse aid.

For more data circle **24** on Reader Service Card

★ ★ ★

Pearlescent Pigment

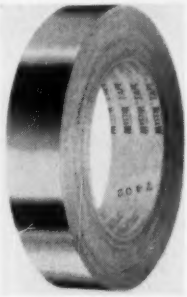
Rona Laboratories, Inc., Bayonne, N. J., has introduced a lead-free synthetic pearlescent pigment. For all practical purposes, the material is non-toxic, the manufacturer states; thus it should prove to be useful for finishing articles where the presence of lead compounds are objectionable. The toy, drug, food and cosmetic industries are among those that require non-toxic finishing materials.

For more data circle **25** on Reader Service Card

★ ★ ★

Aluminum Foil Tape

Pressure-sensitive aluminum foil tape with a silicone adhesive has been announced by Mystik Adhesive Products, Inc., 2635 N. Kildare Ave., Chicago 39, Ill.



Mystic Aluminum Foil Tape

Mystik No. 7402 Aluminum Foil Tape has a two-mil annealed foil backing and a completely inorganic silicone-rubber adhesive. A holland-cloth liner allows easy dispensing.

Temperature range for Mystik Aluminum Foil Tape is rated by the manufacturer as from minus 100 deg. F. to 550 deg. F., but in actual applications the tape has performed satisfactorily at temperatures in the range of 1,000 deg. F.

POWDERED CHROMATES
Promat offers you a complete line of conversion coatings which are economical to use and designed to meet the requirements of individual specifications.

PROMAT

Many years of research and the use of the finest chemicals enables Promat to meet the highest standards in the metal finishing field. Send for free technical information and copy of "Promat's Progress."

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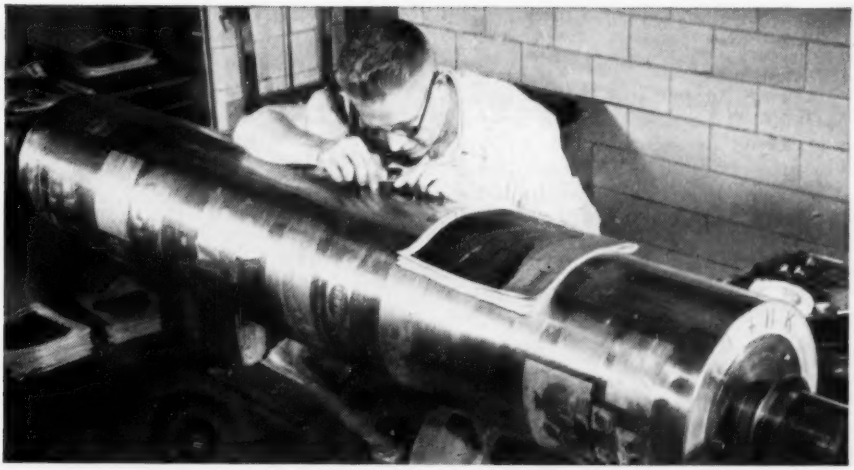
851 SOUTH MARKET STREET PF-3 WAUKEGAN, ILLINOIS
Manufacturing Plants Waukegan, Ill. Philadelphia, Pa. Gardena, Calif.
For additional information and technical assistance write Promat Division — Poor and Company

For more data circle **387** on Reader Service Card



Denver Post finds "Plus-4" Anodes do a better job of plating roto cylinders

The *Denver Post* is one of the few newspapers with its own rotogravure plant. Here it prints its *Empire* magazine and its comic section—also magazine sections for the *Seattle Times* and *Portland Oregonian*. It is noted throughout the Rocky Mountain area and the Northwest for its high-quality color printing.

Two years ago, the *Denver Post* switched to "Plus-4" Anodes in electroplating the printing surfaces of the rotogravure cylinders. The first result noticed was a big reduction in sludge and loss of copper in the solution.

The cylinders come out of the plating tank so uniform that it takes very little time to polish them. The finishers report the copper is good for tooling.

The copper printing surface is superior as far as uniformity and density are concerned. The cylinders hold up for the entire run—400,000 copies in the *Empire* run—and retain full quality in the light tones.

SEE FOR YOURSELF. A trial will show you how Anaconda "Plus-4" (Phosphorized Copper) Anodes can save you time and money—give you better work. Send the coupon today. 57142

ANACONDA®

"Plus-4" Anodes

(Phosphorized Copper)

Made by

The American Brass Company

The American Brass Co., Waterbury 20, Conn.
In Canada: Anaconda American Brass Ltd., New Toronto, Ont.

Give me details on how I can get a test quantity of "Plus-4" Anodes sufficient to supply one tank.

NAME.....

COMPANY.....

ADDRESS.....

CITY.....ZONE.....STATE.....

For more data circle **388** on Reader Service Card

Its wide temperature range makes Mystik 7402 Tape suitable for aircraft and missile applications where temperature extremes are encountered. Other large consumers are appliance manufacturers, who must have tapes that are impermeable to water and vapor, and that retain adhesion at high or below-zero temperatures.

For more data circle **26** on Reader Service Card

★ ★ ★

Bronze Plating Process

A bronze plating process that is said to produce a finish resembling 24K gold in brilliance has been announced by Metal & Thermit Corporation, Rahway, N. J.

Bronze plating with the alloy of 88 per cent copper and 12 per cent tin has proved to be practical in both large and small installations. It is reported to be easy to control.

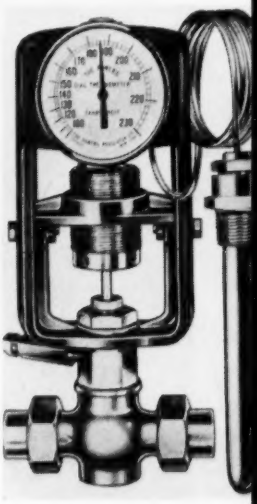
The process is suitable for application by barrel plating or conventional racking. The finish so produced will not tarnish if lacquered properly. It gives good coverage in recesses, since it has excellent throwing power, the manufacturer states.

Further data on the copper-tin alloy deposition process is available from Metal & Thermit Corp., Rahway, N. J.

For more data circle **27** on Reader Service Card

Temperature Regulator

Industrial processes and hot water systems can be accurately checked as well as automatically controlled by an indicating self-operating regulator announced by the Powers Regulator Company, Skokie, Illinois.



Temperature Regulator

The No. 11 regulator has a front-mounted dial thermometer that provides continuous temperature readings of the process under control. The regulator itself automatically governs temperature.

Powers recommends using the indicator wherever uncontrollable factors might cause the temperature to deviate from the desired point. The large dial thermometer is a simple way to check the process.

The No. 11 regulator is a self-operated unit. It consists of a thermal bulb connected by flexible tubing to a diaphragm bellows. The bellows operates a valve mounted in the pipe line to be controlled.

"GRIPALLOY"

. . . Attractive satin sheen primer in black and colors . . .
. . . Amazing tight adhesion to 25 different metals as reported by a large electrical manufacturer . . .
. . . Excellent resistance to Salt Spray, Gasoline and Solvents.

TENAX, Newark, N. J.
Lacquers—Enamels
Synthetics—Varnishes

For more data circle **389** on Reader Service Card

SOLVENTS and THINNERS RECOVERED

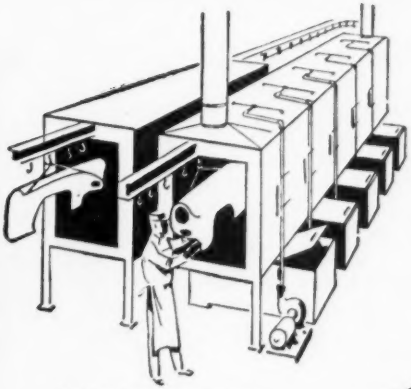
from wash thinners, spoiled lacquers, degreasing machine sludge, etc.
Solvents recovered by the Lofgren Process.
Each customer's shipment, whether one drum or a carload, receives proper and separate treatment. *Write to:*

Solvents Recovery Service, Inc.
1025 Broad St. Newark 2, New Jersey
Hammond Solvents Recovery Service
241 Brunswick Rd. Hammond, Ind.

For more data circle **390** on Reader Service Card

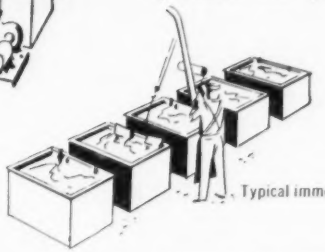
ACP Chemicals and Processes

treat metals fast and economically



Typical power spray system

ACP produces the chemicals for treating most metals—to clean them, to prepare them for further processing, to improve corrosion resistance and paint adhesion. It has the experience and the personnel to apply these chemicals economically and effectively, too. Here are just a few of the many products and processes offered.



Typical immersion system

ACP GRANODINE®—a phosphate coating process for steel which provides an excellent base for paint and greatly improves the corrosion resistance of the paint system.

ACP ALODINE®—an amorphous coating process for aluminum which protects both painted and unpainted metal and anchors the paint finish.

ACP PERMADINE®—a zinc phosphate coating chemical which forms a heavy oil-adsorptive crystalline coating on steel. This coating bonds paint or readily absorbs such rust inhibiting oils as ACP Granoleum.®

ACP DURIDINE®—a dual-action chemical which cleans and phosphate coats steel simultaneously. It carries off harmful surface dirt, oil and grease. It forms a coating which inhibits corrosion and provides an excellent base for the paint finish.

ACP DEXODINE®—a phosphoric acid metal cleaner which removes rust and organic soils, destroys rusters, prepares steel, aluminum, brass, copper and other metals for painting.

ACP METAL CLEANERS — Ridoline,® alkaline metal cleaner, and Ridosol,® solvent-detergent metal cleaner—remove metal preservatives and metal-working lubricants from metals in process.

ACP THERMOIL-GRANODINE® — a manganese iron phosphate crystalline coating chemical which improves the wear-resistant and antigalling characteristics of machined reciprocating ferrous elements. The coating, when oiled or painted, also inhibits corrosion.

ACP ARCHITECTURAL ALODINE® PROCESS forms a chemical coating on aluminum which becomes an integral part of the metal, inhibits corrosion, and provides an attractive and lasting color finish. It also reduces glare, is easy and economical to apply.

Write for the "ACP GUIDE to the chemical treatment of metals"

AMERICAN CHEMICAL PAINT COMPANY, Ambler 14, Pa.

DETROIT, MICH. • ST. JOSEPH, MO. • NILES, CALIF. • WINDSOR, ONT.

CHEMICALS ACP PROCESSES

New Chemical Horizons for Industry and Agriculture

For more data circle 391 on Reader Service Card

The thermal bulb, which is filled with a volatile fluid, is placed in the tank, vat, or line where temperature is to be regulated. Any temperature changes will vary the pressure of the volatile fluid. This pressure is transmitted to the bellows, which operates the valve gradually to hold the process at a constant temperature.

Regulator ranges are available to permit control as low as 60 deg. F. and as high as 260 deg. F. The dial thermometer is available in calibrations to match.

Further information is available in Bulletins 329 and 330. Write Powers Regulator Co., 3434 Oakton St., Skokie, Ill.

For more data circle **28** on Reader Service Card

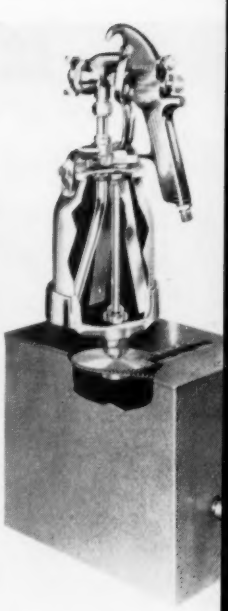
★ ★ ★

Paint Agitator

To prevent "off color" when using "OA" or lucite lacquers, Binks Manufacturing Company has introduced an air-driven agitator siphon cup which thoroughly mixes paints and prevents settling when spray equipment is not in use.

The unit is especially suitable for small batch mixing of colors and for touch-up work. While spraying, its operation is identical to the standard siphon cup.

The agitator is powered by an air-operated variable-speed drive which actuates agitator paddles inside the one-quart cup when it is placed on the power unit. The unit is available in one- or five-cup models.



Binks Paint Agitator

For complete information on the agitator siphon cup, write Binks Manufacturing Co., 3118-40 Carroll Ave., Chicago 12, Ill.

For more data circle **29** on Reader Service Card

★ ★ ★

Thickness Tester for Anodic Coatings

R. O. Hull & Company, Inc., has recently introduced an instrument that automatically checks thickness of anodic coatings on aluminum.

According to the manufacturer, dielectric testing, with this instrument, called the "Anodicator," is a simple

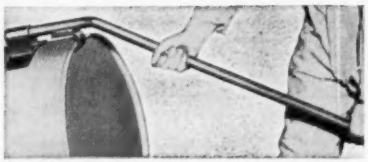
LANLY
FINISHING OVENS
THE LANLY COMPANY • 760 PROSPECT AVE
CLEVELAND, OHIO
WRITE FOR INFORMATION AND LITERATURE

For more data circle **392** on Reader Service Card

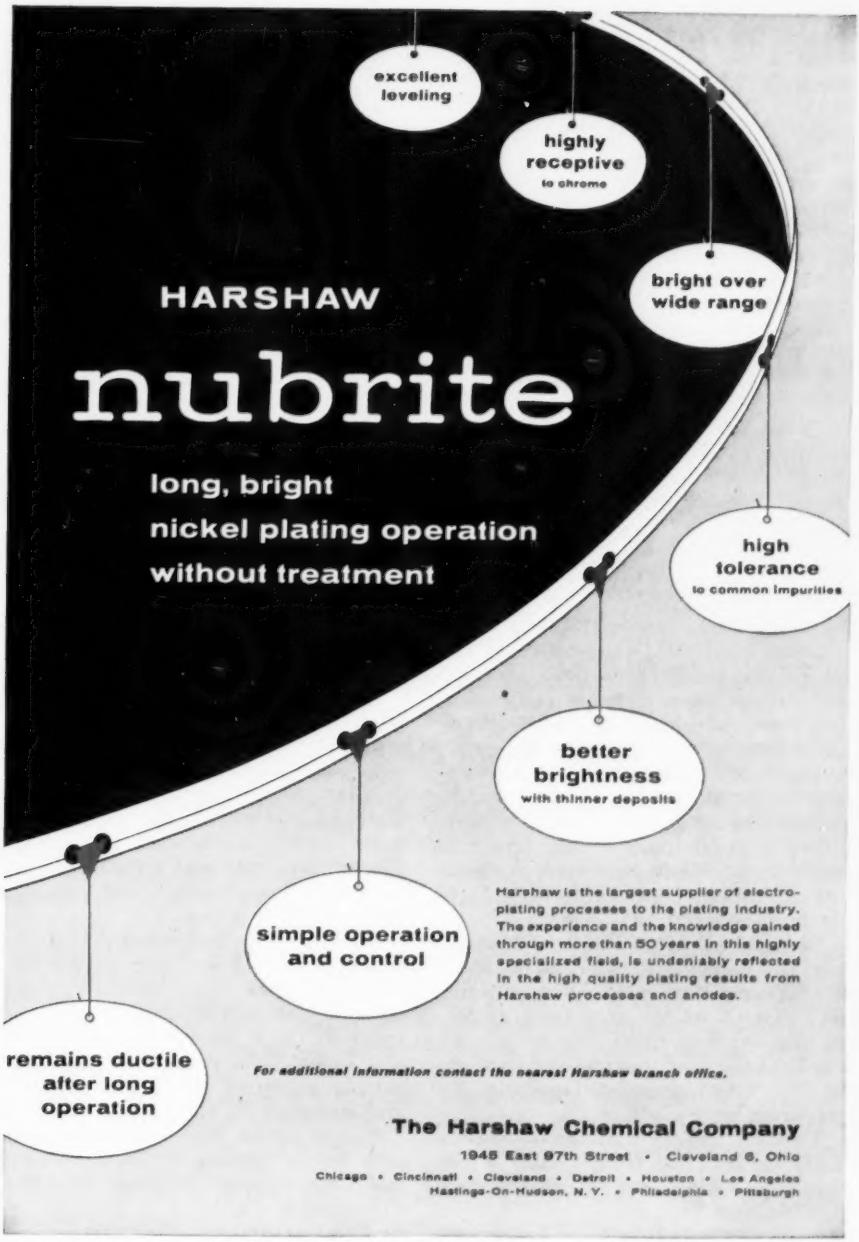
MORSE DRUM UPENDER No. 32

Takes the strain and effort out of upending heavy drums. Has 40" handle offset 35° for top efficiency. Hefty 1¼" hook provides clearance for largest chime. 2½" x 8" toe plate spreads lifting pressure over large area to prevent drum damage. Order Several Today!

MORSE MFG. CO., INC. $6.50 FOB
762 West Manlius St., E. Syracuse, N.Y.



For more data circle **393** on Reader Service Card


excellent leveling
highly receptive to chrome
bright over wide range
HARSHAW
nubrite
long, bright nickel plating operation without treatment
high tolerance to common impurities
better brightness with thinner deposits
simple operation and control
remains ductile after long operation
Harshaw is the largest supplier of electroplating processes to the plating industry. The experience and the knowledge gained through more than 50 years in this highly specialized field, is undeniably reflected in the high quality plating results from Harshaw processes and anodes.
For additional information contact the nearest Harshaw branch office.
The Harshaw Chemical Company
1945 East 97th Street • Cleveland 6, Ohio
Chicago • Cincinnati • Cleveland • Detroit • Houston • Los Angeles
Hastings-On-Hudson, N. Y. • Philadelphia • Pittsburgh

For more data circle 394 on Reader Service Card

and reproducible spot check. It provides a reliable method of testing anodized aluminum and its alloys as specified in ASTM B110-45.

The instrument incorporates two important factors in the measurement of dielectric strength: a uniform, slow rate of voltage increase and uniform pressure of the probe on the anodic surface. It has a motor-driven voltage elevator; it automatically indicates the minimum voltage upon break-through, when a light appears. A toggle switch automatically resets to zero voltage for the next test.

Details on models with capacities of 1,000, 2,000 and 5,000 volts are available by writing R. O. Hull & Company, Inc., 1304 Parsons Ct., Rocky River 16, Ohio.

For more data circle **30** on Reader Service Card

★ ★ ★

Liquid Detergent for Steam Cleaning

Oakite LSD, a liquid detergent designed for use in steam guns and self-generating steam cleaning equipment, has been introduced by Oakite Products, Inc.

Developed to simplify the preparation of steam cleaning solution and to reduce the clogging of coils in self-generating equipment, this liquid is suitable for use in many steam cleaning operations, ranging from light to medium-heavy duty.

Oakite LSD is said to provide effective soil removal at concentrations of 1 to 2 ounces to each gallon of water as delivered by the gun. Used as recommended it is claimed to be safe on steel, brass, and magnesium, and to have no effect on painted surfaces. Its solutions have a pH of 12.

Further information about Oakite LSD is available from Oakite Products, Inc., 20 Rector St., New York 6, New York.

For more data circle **31** on Reader Service Card

Bright Gold

A gold plating solution called "HG Gold," that is said to produce deposits with excellent hardness and brightness, has been introduced by Technic, Inc., Providence, R. I.

Characteristics of deposits produced with this solution include hardness of 130-150 DPH; low stress; little porosity; good brightness; fine grain structure. The solution produces a gold plate of 23 karat or more.

Operating characteristics of the solution include high efficiency; permissible operating temperatures of 60 to 90 deg. F.; low cyanide content (less than 1/10 oz./gal.). No organic brighteners are used with this gold plating solution.

A descriptive brochure, "Technic HG Gold," is available from Technic, Inc., 39 Snow St., Providence, R. I.

For more data circle **32** on Reader Service Card

★ ★ ★

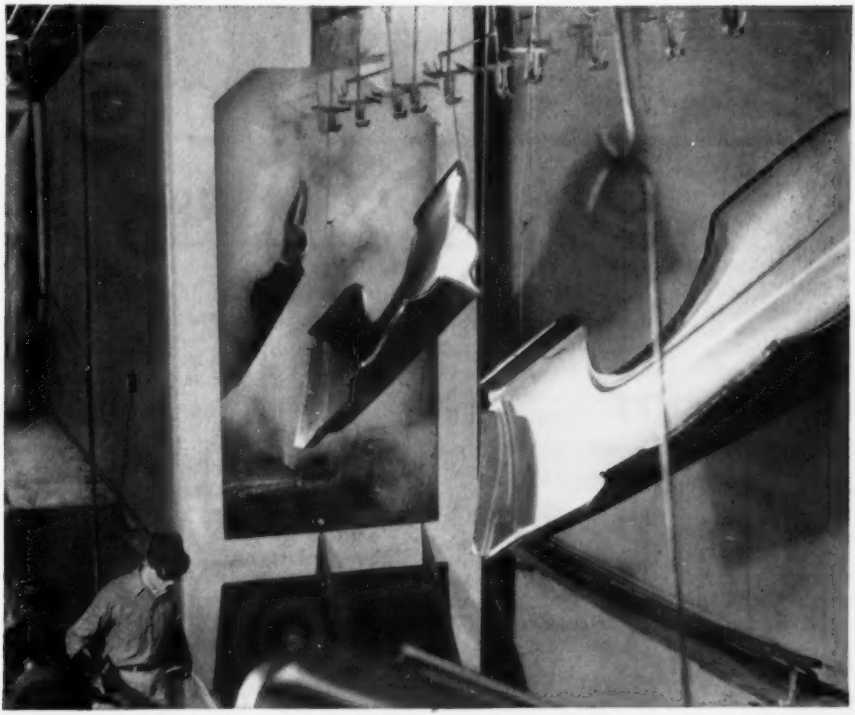
Method for Dressing Diamond Wheel

The Cratex Manufacturing Company has announced a method for dressing and cleaning metal-bonded diamond wheels. It has been found that Cratex (rubberized abrasive) Blocks do a fast and effective job of removing smear metal and clogging from diamond wheels.

Because of its cushioned action, the Cratex Block "flows" around the diamond particles, and cleans away the smear metal with minimum danger of knocking the expensive diamond particles loose. This method restores the cutting action of the diamond wheel and increases its life.

Details about this method may be obtained by writing to Cratex Manufacturing Co., 81 Natoma St., San Francisco 5, Calif.

For more data circle **33** on Reader Service Card



Experienced formulators know metal cleaners containing Dow Alkali do top job

Does the formulator of your cleaning compounds use Dow Alkali?

Experienced users of metal cleaning compounds prefer formulations made with Dow Caustic Soda or Dow Sodium Orthosilicate for spray cleaning, soak cleaning and electrolytic cleaning. That's an important fact for anyone who cleans metal parts to keep in mind. The reason is simply that experienced users are in the best position to judge the effectiveness and economy of the cleaning materials they use.

Their years of experience have proved to them that formulations made with Dow Alkali *consistently* give them the best results in terms of faster, more thorough cleaning and with fewer parts rejected—because Dow Alkali delivers the most effective cleaning power money can buy! THE DOW CHEMICAL COMPANY, Midland, Michigan, Department AL-610L-1.

YOU CAN DEPEND ON DOW

For more data circle 396 on Reader Service Card

News of the Industry

New plants . . . company news . . .
new positions . . . meetings . . . necrology . . .

NEW PLANTS

The **DeVilbiss Company** has moved its branch in northern California from Santa Clara to San Jose.

The move follows the establishment of new branch facilities in Los Angeles to serve southern California and Arizona and the establishment of enlarged sales-service headquarters in Seattle for the Pacific Northwest and at Salt Lake City for the Inter-Mountain area.

The northern California branch is in a new building at 1335 N. 10th St.

Facilities for sales, service, engineering, repair and exchange will be maintained in the new building.

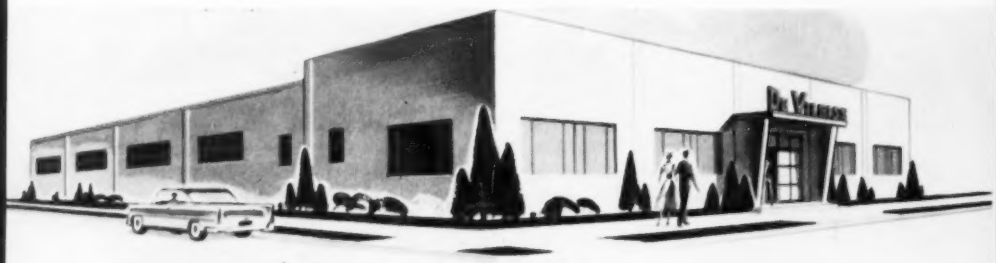
Complete service of DeVilbiss products for northern California and northwestern Nevada will be provided from this branch, which will continue to be headed by D. L. Bohon, divisional sales manager.

NRC Equipment Corp., Newton, Mass., has opened a sales office in Detroit. **William C. Long** has been appointed manager of this office, which is located at 19185 James Couzens Highway, Detroit 35, Mich. The Detroit office will serve all the Michigan as well as the Fort Wayne and Toledo areas.

★ ★ ★

Universal Rack Company, Inc., has opened a new plant in Lebanon, Tennessee. This plant will supply plating and anodizing racks to the southeastern part of the United States.

The new plant is equipped to carry out the necessary coating and allied processes involved in the manufacture of plating racks. One of the principal types of plating racks to be manufactured here is one that incorporates a



Architect's perspective of the new DeVilbiss branch recently opened in San Jose, California

Harry Tenpenny

Duke Tyler Scott

Recently Opened Plant of Universal Rack Co.

removable, replaceable workholder, which facilitates replacement of tips.

Duke Tyler Scott is general manager of the company. He was formerly employed by General Electric Company at Appliance Park, Ky., as a plating process planner.

Harry Tenpenny has been appointed sales engineer for the firm. Mr. Tenpenny is a member of the Atlanta branch of the American Electroplaters' Society.

Western Coating Co. has moved from Elyria, Ohio, to a new and larger plant in Royal Oak, Mich. The firm manufactures strippable coatings and stop offs for electroplating.

★ ★ ★

The General Supply Co., The G. S. Equipment Co., The Singleton Co., and The G. S. Plastics Co., a group of supplier companies exclusively serving metal finishers, have moved into a new plant at 15583 Brookpark Rd., Cleveland, Ohio. The announcement was made by T. R. Gill, president of General Supply Co. and G. S. Equipment, and executive vice president of Singleton and G. S. Plastics.

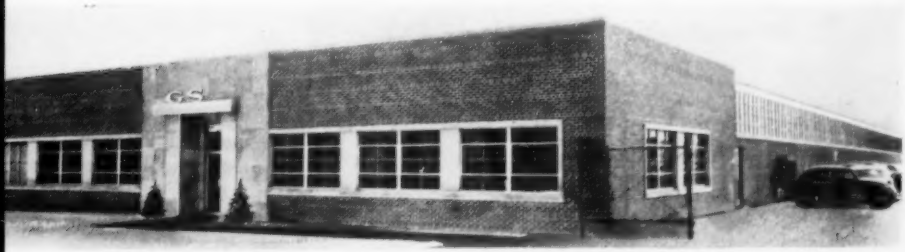
The new plant has 30,000 square feet of floor area and is equipped with modern facilities for engineering and development, laboratory control, fabricating in metal and plastics, inventory warehousing, and shipping.

The General Supply Co. serves Ohio and fringe areas of neighboring states with metal finishing materials and supplies.

The G. S. Equipment Co. is a national sales organization for a complete line of "full-cycle" mechanized and automatic plating equipment and accessories.

The Singleton Co., Albert Singleton, president, manufactures the above-mentioned products.

The G. S. Plastics Co., W. A. Munkacsy, president, offers many products and services utilizing plastisol, epoxy, vinyl, neoprene, and other protective coatings and adhesives. The



New G-S Plant in Cleveland, headquarters for metal finishing equipment and supply group.

company manufactures completed, coated equipment, also manufactures coatings for resale, and offers a custom service of applying coatings.

★ ★ ★

A company called **Polykote, Inc.,** has been established in Cleveland, Ohio, for the purpose of applying plastic coatings to tanks and other industrial equipment. The company was formed by purchase of existing coating facilities of R. W. Renton & Co. James R. Jones, Jr., who was formerly associated with The Claremont Pigments Dispersion Corp., is president of the new company. Associated with Mr. Jones in the new venture are Robert Renton, president of R. W. Renton & Co., and K. M. Keller, president of Keller Products, Inc., Division of the Macco Chemical Co.

★ ★ ★

The first step in a long-range expansion program has been announced by the **Sethco Mfg. Co.** Sethco's factory and offices have been moved to a recently completed building at 2292 Babylon Turnpike, Merrick, Long Island, New York.

Devoted to the development and manufacture of filters, pumps, and filter pump units, the modern plant is equipped with many new, streamlined production methods. The new installation has more floor space, manufacturing and warehousing facilities.

Also expanded is Sethco's research department.

Construction of a new building to be used exclusively for the manufacture of the multicolored paint product Plextone has been begun by the **Plextone Corporation of America,** which was founded by **Maas & Waldstein Company.**

The project was announced by Dr. G. Klinkenstein, Plextone Corporation of America president, who stated that the move was part of a nationwide program of expansion to provide broader, more thorough service and to meet the growing industrial demand for multicolors.

★ ★ ★

A new branch-office and warehouse in Los Angeles has been opened by **Sel-Rex Corporation,** Nutley, New Jersey, manufacturer of precious metals processes, rectifiers, ground and airborne d.c. power supplies, and metal finishing equipment and supplies. **Maurice B. Perkins,** formerly sales engineer with Wildberg Brothers Smelting and Refining Company, has been named to head the offices and west coast operations.

Maurice B. Perkins

The new office is located at 2054 Granville Ave. It incorporates vault facilities for storage of gold, rhodium

Sethco's New Plant in Merrick, New York: filters, pumps and filter pump units

HAVE YOU OVERLOOKED USING RINS-AID?

RINS-AID provides a water-repellent surface on freshly plated parts that makes almost all of the water flow instantly from the surface before staining occurs. Among the applications reported by users (which may suggest valuable uses to you) are:

TO PREVENT STAINING, TARNISHING AND FACILITATE DRYING—

- Automobile Bumpers
- Micrometer Assemblies
- Silver Plated Electrical Contact Mechanisms
- Complicated Cadmium Plated Assemblies
- Copper Plated Hardware
- Steel Springs
- Tubing—outside and inside

FOR COMPLETE DRAINAGE AND FREEDOM FROM NICKEL OR CHROMIC ACID SALTS FOR POSITIVE ELECTRICAL CONTACT—

Telescoping Auto Antennae

FOR PREVENTING RUSTING OF UNPLATED AREAS—

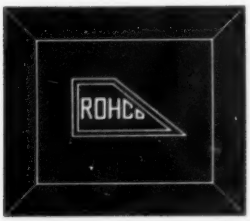
Steel Parts

WHAT ARE THE AMAZING QUALITIES OF RINS-AID?

RINS-AID imparts a buffed appearance to chrome; gives a uniform, velvety appearance to cadmium; eliminates cut-through buffing of stained parts; in many cases eliminates special drying; removes water from the inside of tubes and other inaccessible areas, and makes active electropolished or bright dipped surfaces dry better without staining. It also provides an excellent way to prevent tarnish and add shelf-life to all plated articles. ONLY 2 TO 20 FLUID OUNCES OF RINS-AID ARE REQUIRED PER 100 GALLONS OF WATER.

FREE—ONE QUART TRIAL OFFER! Enough to demonstrate, under your own plating conditions, what RINS-AID does.

R. O. HULL & COMPANY, INC., 1304 Parsons Ct., Rocky River 16, Ohio



R. O. HULL & COMPANY, INC.
1304 Parson Court
Rocky River 16, Ohio

Yes, send FREE, ONE QUART TRIAL OFFER of RINS-AID! No obligation, whatsoever.

Name ..... Title.....

Company .....

Street Address .....

City..... Zone..... State.....

For more data circle 397 on Reader Service Card

and other precious metals salts and solutions. A factory-trained service engineer is to be assigned to the completely staffed offices to provide installation services and to assist in the solution of customers' technical problems.

In addition to Sel-Rex Precious Metals Processes, the new west coast offices will provide direct factory sales and service representation on Sel-Rex Rectifiers, Liquid Clarification Filters, and the portable automatic "Jet (electro-) Plater."

★ ★ ★

S. G. Bart, president of Electroplating Design, Inc., has announced that the name of this company has been changed to **Bart Laboratories & Design, Inc.** A. G. Buschow will continue as vice president and chief engineer, and **Dr. D. S. Carr** has been appointed director of research. The company will continue to operate in its plant at 231 Main St., Belleville 9, N. J., engaging in electroplating consulting and research, design of special plating equipment, and plating plant design.

★ ★ ★

Rapid Electric Company, Bronx, New York, has opened a Detroit branch office at 12838 Fenkell Ave.

George DeMirjian will direct sales-service operations. Standard rectifier units will be stocked and available for immediate delivery. A repair and parts replacement service will be also offered.

COMPANIES

American Smelting and Refining Company has acquired all of the outstanding stock of **Enthone, Inc.,** New Haven, Connecticut, in exchange for shares of common stock of ASARCO. Enthone manufactures metal finishing specialties and equipment.

An announcement made by K. C. Brownell, chairman of the board and chief executive officer of American Smelting, stated that Enthone will be operated as a subsidiary of ASARCO.

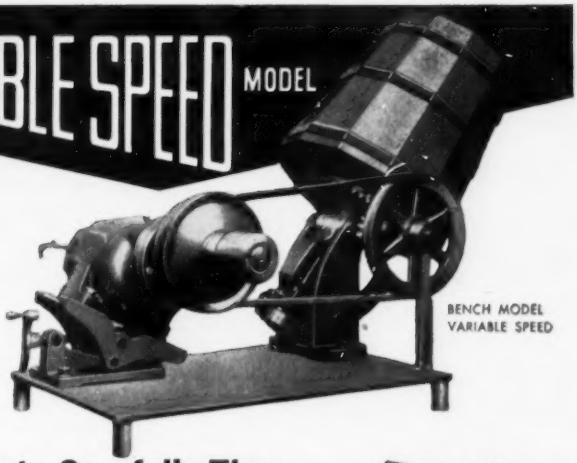
Sales and distribution policies will be coordinated as quickly as possible without jeopardizing the interests of the distributors now handling the two lines of products, according to Mr. Brownell. **Dr. Walter R. Meyer** will continue as president of Enthone. **M. R. Herman** of ASARCO will replace **J. F. Buckman,** vice president, who is retiring. **C. C. Helmle,** Enthone sales manager, and **Sherman M. Goble,** manager of Federated's Electrochemical Department, will coordinate the sales efforts.

New Detroit Office: Rapid Electric Company

Interior of Rapid Electric's Detroit office

INVESTIGATE THIS TIME-SAVING

VARIABLE SPEED MODEL



BENCH MODEL
VARIABLE SPEED

Bench-Type Single Speed

No. 5—Single Speed

No. 5—Variable Speed

Note Carefully These IMPORTANT POINTS

Barrels can be filled with parts or abrasive — *while running.*

Work can be watched — samples removed for inspection — *while running.*

Angle can be changed for best abrasive or polishing action — *while running.*

Barrels can be emptied by tilting to pouring position — *while running.*

Barrels are made in various sizes, shapes, and materials. They are easily replaced.

No. 5A—Single Speed

No. 5A—Variable Speed

No. 6—Single Speed

If You're a Tumbler, Send for This NEW CATALOG

No. 6—Variable Speed

THE HENDERSON BROS. COMPANY

"The Tumbling Barrel People"

134 SOUTH LEONARD STREET
WATERBURY, CONNECTICUT

SINCE 1880 DESIGNERS AND BUILDERS OF TUMBLING BARREL EQUIPMENT

For more data circle 398 on Reader Service Card

A supervisor at **National Lead Company's** Chicago plant recently became part owner in **Minnesota Mining and Manufacturing Co.**, St. Paul, Minn., by picking up a roll of "Scotch" brand masking tape.

Walter Rzepka, an employee of National Lead's Kirksite Die and Engineering department, was the finder of the two billionth commercial-sized roll of tape produced by the 3M company in its 32 years of tape making.

The symbolic roll was produced in January and sent through regular distribution channels to be discovered by a worker using tape at his job in some industrial plant.

The recipient receives 10 shares of 3M common stock—market value was $75 on the day the roll was found—and an expense paid trip for two to St. Paul to exchange the roll.

Walter Rzepka, shift supervisor at National Lead Company, Chicago, checks current stock quotations for Minnesota Mining and Manufacturing Co. stock. He holds the roll of "Scotch" brand masking tape that brought him ten shares of the St. Paul, Minnesota firm's common when he picked up the tape to mask a prototype auto model before spray painting. The tape, mounted on a gold-plated core, is the two billionth commercial sized roll made by the 3M company in its 32-year history as a tape manufacturer.

Diamond Alkali Company, Cleveland, Ohio, producer of basic chemicals and specialized products for industry and agriculture, has announced the adoption of a new trademark which will henceforth be used to identify the company and its products.

Diamond Alkali's New Symbol

The new mark, called the "Chemical Diamond," has been designed to provide originality and visual recognition values that will make it "an effective aid in product selling, merchandising, advertising and public relations by creating new, instant-identification . . ."

At the same time, the symbol is regarded by Diamond Alkali as more truly representative as a mark of identification for Diamond's line of organic and inorganic chemicals, now numbering more than 100.

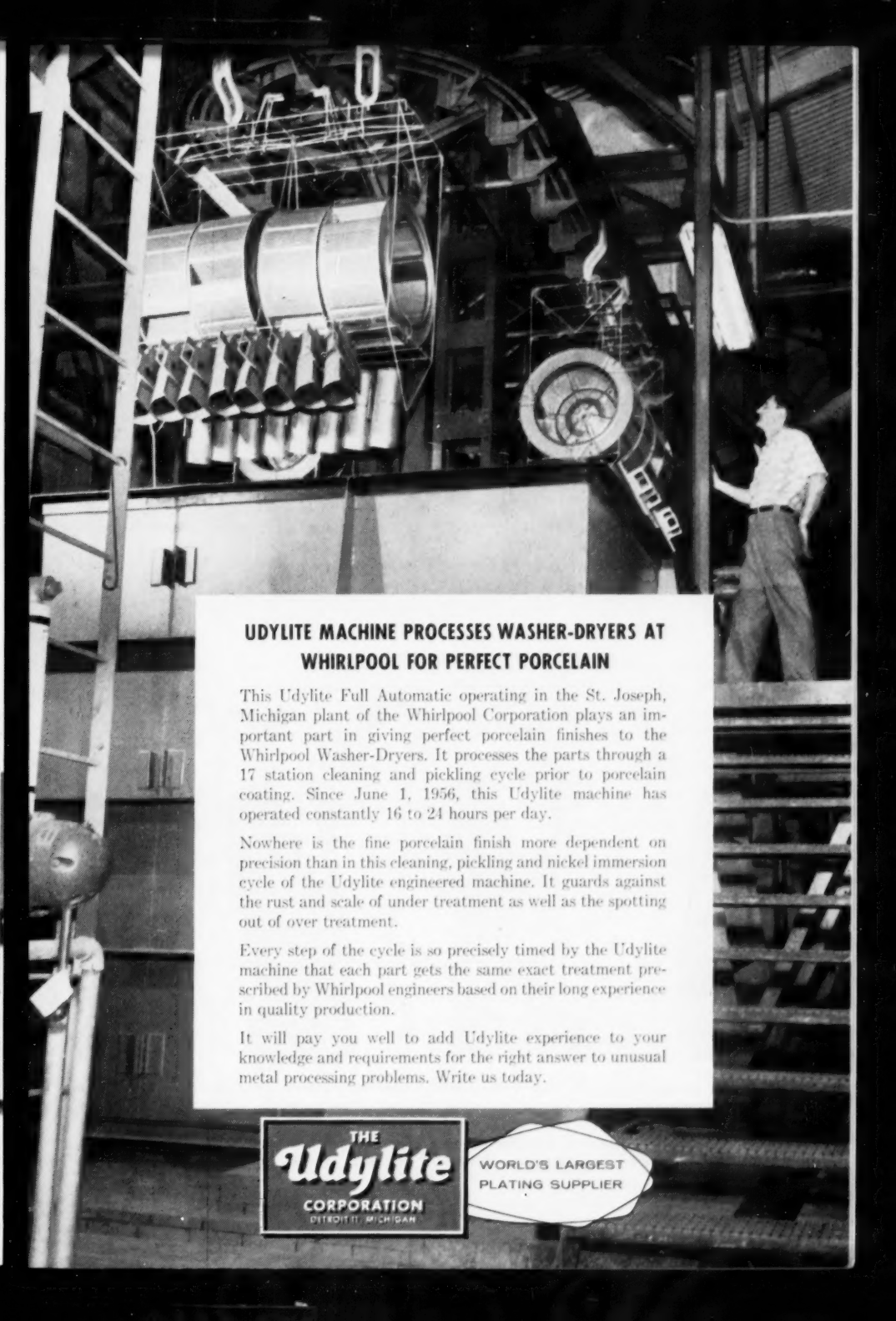
Replacing the conventional horizontal lozenge or diamond-shape design formerly used as the company's trademark, the Chemical Diamond suggests both the letter "d" for Diamond and a chemical retort, traditionally regarded as a graphic symbol representative of the chemical industry.

Symbolically, due to the location of the diamond, which represents the company, the design places the Diamond organization directly in the center of the chemical industry.

The style of the calligraphic letter "d" used comes from a fifteenth century French manuscript. Classic in origin and tone, the ingenious insignia is still contemporary in appearance and modern in mood, thereby enhancing the symbol with a timeless quality that defies the possibility of its ever becoming "dated."

The result of nearly two years' research and study by the designers in collaboration with the company, development of the new Diamond service symbol signals the first step in a coordinated, long-range program by Diamond to streamline and modernize its packages and labels.

For more data on advertisement on opposite page circle **399** on Reader Service Card——→



UDYLITE MACHINE PROCESSES WASHER-DRYERS AT WHIRLPOOL FOR PERFECT PORCELAIN

This Udylite Full Automatic operating in the St. Joseph, Michigan plant of the Whirlpool Corporation plays an important part in giving perfect porcelain finishes to the Whirlpool Washer-Dryers. It processes the parts through a 17 station cleaning and pickling cycle prior to porcelain coating. Since June 1, 1956, this Udylite machine has operated constantly 16 to 24 hours per day.

Nowhere is the fine porcelain finish more dependent on precision than in this cleaning, pickling and nickel immersion cycle of the Udylite engineered machine. It guards against the rust and scale of under treatment as well as the spotting out of over treatment.

Every step of the cycle is so precisely timed by the Udylite machine that each part gets the same exact treatment prescribed by Whirlpool engineers based on their long experience in quality production.

It will pay you well to add Udylite experience to your knowledge and requirements for the right answer to unusual metal processing problems. Write us today.

THE Udylite CORPORATION
DETROIT 11, MICHIGAN

WORLD'S LARGEST PLATING SUPPLIER

Technic, Inc., has announced appointment of **The F. J. Marchuk Co.**, as its representative in the states of Arizona, California, New Mexico, Oregon and Washington. The new offices of The Marchuk Company are at 261 East Colorado St., Pasadena, Calif.

In addition to Technic engineered electroplating systems, The Marchuk Company will distribute Technic potassium gold cyanide, sodium gold cyanide, hard bright gold, rhodium sulfate, palladium plating solution, platinum plating solution, immersion tin, and Protectox silver and copper anti-tarnish.

★ ★ ★

Wiretex Manufacturing Co., Inc., Bridgeport, Conn., manufacturer of a complete line of wire mesh products, has appointed **F. H. Ross & Co.**, Charlotte, North Carolina, as distributors in the Southeast.

Almost 400 retired employees returned to **Norton Company's** first "Retiree Homecoming Day."

The five-hour program gave former employees a chance to renew old friendships, learn of the progress made by the company since their retirement and a chance to visit their former departments at their leisure.

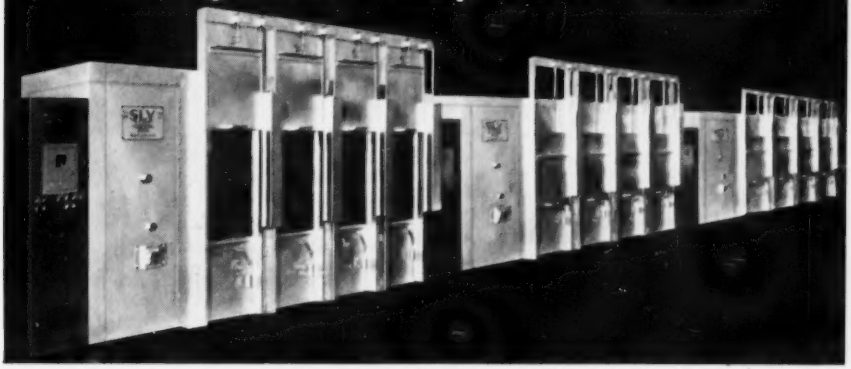
The morning session began with an informal coffee period which gave the returning retirees time to pick up their name badges and to look for old friends. The only formal part of the day's activities consisted of a series of five-minute talks by key executives of the company's six divisions who described the developments of recent years in their own specific areas. (They brought the retirees up to date on what's been going on, described what's new, and gave them a look at future plans.)

Most of the retired employees returned to the departments where they had formerly worked to visit with former associates or to see what

Some key personnel of F. H. Ross & Company discuss company's recent appointment as Southeastern distributor for the Wiretex Manufacturing Co., Incorporated, manufacturer of complete line of wire mesh products. Pictured from left to right are J. M. Lass, sales manager, G. W. Coan III, salesman, T. W. Moore, salesman, J. R. Parham, salesman, M. W. Reimler, technical director, H. M. Bove, salesman and M. W. Couvoisier, salesman.

SLY Industrial Ovens

Give Better Electrical Coatings Through Close Temperature Control



Remarkably compact, each oven measures 10'-6" wide by 6'-0" high by 3'-8" deep—14' overall.

A leading manufacturer of transformers needed ovens to cure the products' plastic coating. Close temperature control was required; floor space was limited.

The problem was solved by installing Sly batch type ovens — three individual ovens with four compartments per unit, in line.

Each oven has its own direct gas-fired air heater and is complete with its own temperature and safety control system.

The ovens are equipped with overhead lift doors — 2' wide by 3' high — for manual loading and unloading. The transformers, on pallets, enter on gravity type roller conveyors. When a door is opened, an automatic damper closes off the heat supply for operator comfort. When door is closed, the damper is automatically opened to allow heated air to pass over the work.

Shop-assembled, the ovens required a minimum of labor to install.

Close temperature control with economies in efficient use of available space plus savings in installation and operation were achieved in this case — typical of Sly. Ask for Bulletin 200 and let's discuss your problem.

Designers and Manufacturers of: Dust Control Systems, Industrial Ovens, Blast Cleaning Equipment, Tumbling Mills.

SINCE 1874 SLY

THE W. W. SLY MANUFACTURING CO.

4784 TRAIN AVENUE • CLEVELAND 1, OHIO

OFFICES IN PRINCIPAL CITIES

For more data circle 400 on Reader Service Card

changes had taken place in their old jobs. Some chose to visit new areas of the plant which had not even existed when they were actively employed. A few took this opportunity to just visit with other retirees who had returned for the day.

Retiree Homecoming Day was planned as a concrete expression of appreciation by the company of the interest and loyalty of the people who played such an important part in the past growth of the firm.

★ ★ ★

Cowles Chemical Company, Skaneateles Falls, New York, has been presented an award for completing one quarter million man-hours with accident frequency rate less than 50 per cent of the average for the chemical industry. Robert F. Huntley, president of Cowles, received the award for this outstanding safety accomplishment from William Douque, manager, Employers Mutual Liability Insurance Company of Wisconsin.

Robert Huntley, right, president of Cowles Chemical Co., receives safety award from William Douque, manager of Employers Mutual Liability Insurance Co. of Wisconsin.

This presentation was made at a special safety meeting of all Cowles production, research, and engineering

A Farewell to
CADMIUM
BLISTERS
See these blisters? We have to scrap almost all these parts. We're not getting the cutting oil off in the spray washer.
Hi, Jack, looks like I got here just in time!
"Say, Burt, how did Pennsalt develop this cleaner?" "Well, Jack, nobody knows more about metal-processing chemistry than Pennsalt. Our Whitemarsh Research Lab is constantly working on problems like yours, and Cleaner 38 is just one of their outstanding successes. By the way..."
. . . you can store these parts for a day or so before putting 'em on the plating line. The unrinsed cleaner film will prevent rusting.
Fine—I won't have to keep both lines running together now.

personnel at the Skaneateles Falls location. John Bates, superintendent, presided over the ceremonies. Mr. Huntley accepted the plaque and flag awards on behalf of the company and presented them to Robert Hughes, local president of UMW, representing the plant employees.

★ ★ ★

H. D. McKinney

H. David McKinney, marketing manager of **Metalwash Machinery Corporation,** Elizabeth, New Jersey, was guest lecturer last month at the Carnegie Institute of Technology Graduate Course for Junior Executives.

Recently appointed marketing manager of Metalwash, manufacturer of spray washing equipment, Mr. McKinney discussed Public Relations, Marketing and Management as tools of modern management.

NEW POSITIONS

Lea Manufacturing Co. has announced the appointment of the following officers and directors: **Earle W. Couch,** president and assistant treasurer; **Richard P. Crane,** senior vice-president; **Henry L. Kellner,** vice-president; **William D. Starr,** treasurer and assistant secretary; **Ellsworth T. Candee,** secretary; and **Marion G. Lynch,** controller.

Also appointed to executive positions for Lea are **D. F. Mosher,** vice-president and manager of Lea-Michigan, Inc., Detroit, Mich.; **Kergan Wells,** secretary and manager of Lea Manufacturing Co. of Canada, Ltd.; and **Frank Anderson,** managing director, Lea Manufacturing Co. of England, Ltd.

Well, Burt Adams from Pennsalt! Can you keep our cadmium plate from blistering?
You need our new, low-foaming alkaline spray cleaner. I'll have a drum here tomorrow.
NEXT DAY...
What! Do we use only half as much as the old cleaner?
That's right, Jack. Pennsalt Cleaner 38 keeps your costs in line, besides being the end to your blistering troubles.
A WEEK LATER...
Hi, Burt. Yeah, the blisters are gone—we haven't sent more than two parts back since we switched to Pennsalt spray cleaning. Now—how about giving me a Pennsalt electro-cleaner?

Blistered plating is just one finish problem Pennsalt can solve for you. Let the Pennsalt salesman help you achieve "A BETTER START FOR YOUR FINISH." Send the coupon today.

Pennsalt Chemicals

Pennsalt Chemicals Corp., Dept. 510
3 Penn Center, Phila. 2, Pa.

Send me information on Pennsalt ☐ metal cleaners ☐ phosphate coatings ☐ cold-working lubricants

Name_____ Title_____

Company_____

Street Address_____

City_____ Zone____ State_____

For more data circle **401** on Reader Service Card

Kirk & Blum Mfg. Co., Cincinnati, Ohio, recently celebrated its fiftieth anniversary. The company's products include standard and custom-built ovens and oven accessories, ventilating systems, dust collecting equipment and other products.

★ ★ ★

Phil H. Richey, former plant manager of the Bowling Green, Ky., facilities of Detrex Chemical Industries Inc., has been appointed vice-president of finance for **Wagner Bros. Inc.**, Detroit, Mich.

In his new position, Mr. Richey will direct all financial and accounting operations for the Detroit manufacturer of plating equipment and supplies.

Phil H. Richey

W. F. Newbery

A. O. Thalacker, president of **Detrex Chemical Industries, Inc.**, has announced the appointment of **W. F. Newbery** as vice president in charge of Industrial Sales.

Mr. Newbery joined Detrex in 1934 as a salesman. In 1942, he was appointed assistant sales manager—and in the same year, made assistant general sales manager.

In 1948, he assumed the responsibilities of director of sales, an appointment he has held until this time.

The appointment of **R. W. Couch** as manager of Electrochemical Research and Development has been announced by **Metal & Thermit Corporation**, Rahway, New Jersey.

R. W. Couch

Carl R. Gloskey

Mr. Couch has been with Metal & Thermit and its former subsidiary, United Chromium, Inc., in research and supervisory capacities since 1941. In his new post he assumes the overall management of the company's Detroit and other Michigan laboratories.

Dr. F. A. Lowenheim

Metal & Thermit also announced the appointment of **Dr. F. A. Lowenheim** as technical advisor to Dr. C. K. Banks, vice president of Research and Development.

Dr. Lowenheim has been with Metal & Thermit since 1936 as a research chemist and research supervisor.

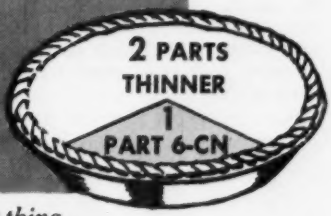
Carl R. Gloskey has been appointed manager of the recently formed Process Development Division of Metal & Thermit Corporation.

Mr. Gloskey has been with Metal & Thermit's Research and Development department since 1946.

EGYPTIAN 6-CN

Still

MOST ECONOMICAL QUALITY METAL FINISH



Application-wise Egyptian 6-CN is the nearest thing to the proverbial pie you can eat and have too!

EGYPTIAN IMPROVED, TIME-TESTED FORMULA NOW GIVES YOU ALL 10 DESIRABLE METAL FINISHING CHARACTERISTICS

- Economical Application—thin 1 part Clear to 2 parts thinner.
- Improved to Minimize Orangepeel.
- Fast Air Dry—10 to 15 minutes at room temperature.
- Excellent Adhesion to clean metal.
- Ease of Application—spray or dip without special solvents.
- Exceptionally Light Color Film.
- Dries to a Glossy, Tough, Flexible Film.
- Film Properties Improve with Age.
- Good Resistance to Perspiration.
- 6-CN can be baked 15 to 20 minutes at temperatures to 250°F improving adhesion, toughness and perspiration resistance.

Egyptian 6-CN is trimming metal finishing costs for thousands of product manufacturers everywhere. If your problem is *Finishing Room Economy*, at no sacrifice to *Quality* . . . call an Egyptian Industrial Finishes Specialist in to-day! No obligation of course.

EGYPTIAN *Industrial Finishes*

The EGYPTIAN LACQUER MANUFACTURING COMPANY

BOX 444, NEWARK 1, NEW JERSEY

EXECUTIVE OFFICES, ROCKEFELLER CENTER, N. Y. • Plants: South Kearny, N. J.—Lafayette, Ind.

For more data circle 402 on Reader Service Card

Three new officers have been elected by the **DeVilbiss Company** board of directors. **John M. Robinson,** vice president in charge of finance, moved up to executive vice president. **John M. Ehni,** export sales director, was elected vice president-foreign sales, and **Edward J. Etzel,** director of purchases, was promoted to vice president-purchasing.

John M. Ehni

John M. Robinson

Edward J. Etzel

F. M. Mansfield III

Frank M. Mansfield III, formerly manager of product planning and market research for General Electric's Metallurgical Products Department has been named sales manager and vice president of **Wagner Brothers, Inc.,** Detroit, Mich., producers of plating equipment and supplies.

According to Joseph R. Wagner, Wagner president, Mr. Mansfield's new duties will include directing the company's field sales force and distributors.

★ ★ ★

Paul A. Benke has been appointed vice president and general manager of **Paasche Airbrush Company,** a Division of Cline Electric Manufacturing Company, Chicago, Illinois.

Mr. Benke began his association with Cline Electric in 1951 as assistant director of the War Products Division. In 1954 he was appointed secretary of the Corporation. When Cline Electric assumed ownership of Paasche Airbrush Company on July 1, 1955, Mr. Benke was installed as vice president and assistant general manager of the company.

Paasche Airbrush Company manufactures spray painting equipment and automatic finishing units.

★ ★ ★

Norman E. Woonton has been elected vice president of manufacturing at the annual meeting of the directors of **Cowles Chemical Company,** Cleveland, Ohio. Mr. Woonton has been manager of Cowles' Skaneateles Falls, New York plant. He will continue in this position and will make his headquarters there. In addition, he will be in charge of all manufacturing and production operations at Cowles' other plants located at Lockport, New York and Sewaren, New Jersey.

All other officers and directors were re-elected.

★ ★ ★

Edward S. Dik, associated with **The Abbott Ball Company** since 1954 as general manager, has been promoted to vice president.

Mr. Dik will continue to act as general manager for the firm, which manufactures carbon steel bearing balls, barrel finishing materials and tumbling barrels.

William R. Swift has been appointed general field service representative for **Cowles Chemical Company,** Cleveland, Ohio.

Coincident with Mr. Swift's appointment came an announcement from Cowles that the name of the metal cleaner department has been changed to the metal finishing chemicals department.

"The new designation of the department is more descriptive of its true function," Carl C. Clabaugh, manager of the department, observed. "We shall continue, of course, to manufacture and market a complete line of alkaline and other metal cleaners. In addition to the cleaners, however, we manufacture Ty-Bond zinc phosphate coatings, aluminum processing chemicals, and Cowles Anti-Corrode oils. The new designation will also encompass a number of other metal finishing chemicals now in research and development."

W. M. Burge, former midwestern regional sales manager of **Oronite Chemical Company,** has been appointed West Coast regional sales manager. He will live in San Francisco. **H. B. Pollock** succeeds Mr. Burge as midwestern regional sales manager at the company's Chicago headquarters. **T. M. Welton,** formerly Chicago sales manager and more recently Pacific Coast regional sales manager, moves to New York as eastern sales manager for Oronite.

★ ★ ★

Hanson-Van Winkle-Munning Co. has announced the appointment recently of **William A. Nairne** as manager of Buff Sales.

Mr. Nairne's headquarters will be in Grand Rapids, Mich., at the company's midwest plant.

For the past three years Mr. Nairne has served as sales representative in the company's San Francisco area.

William R. Swift

Mervyn T. Walsh

William A. Nairne

George H. Williamson

Appointment of **Mervyn T. Walsh** to manager muriatic acid sales for the Chlorinated Products Division of **Diamond Alkali Company,** Cleveland, Ohio, has been announced by L. J. Polite, Jr., divisional sales manager.

In addition to his new responsibilities, Mr. Walsh will continue to manage sales of Chlorowax a chlorinated paraffin available in both liquid and resinous forms.

George H. Williamson has been elected vice-president in charge of West Coast activities, **American Chemical Paint Co.**

Mr. Williamson has been associated with the company since 1935, specializing in the sale of rustproofing chemicals and processes for the metalworking field. He pioneered the use of ACP Thermoil-Granodine as a heavy manganese phosphate wear-resistant coating in the automotive industry.

HONORS

John Mackesy, one of the San Francisco representatives of **Oakite Products, Inc.,** for the past sixteen years, has been selected as the winner of the 1956 David C. Ball Award for Distinguished Oakite Service. The award, established in memory of the founder of the industrial cleaning and metal treating firm, is given annually to the representative who "best carries forward with his customers the highest ideals of Oakite Service."

Mr. Mackesy has been with Oakite since 1939. He received the award from John A. Carter, company president, at Oakite's recent anniversary conference in New York City.

TRAINING COURSES

The **Joseph B. Kushner Electroplating School** of 115 Broad St., Stroudsburg, Pennsylvania, has announced that effective July 30, 1957, the tuition fee for *Electroplating Know How,* its home study course covering every phase of electroplating, will be advanced from $125.00 to $150.00. Group training rate discounts for industrial organizations (manufacturers and job shops) will remain the same as before; 3 to 5 men enrolled at one time, 10 per cent off the total fee; 6-10 men enrolled at one time, 15 per cent off the total fee. The tuition fee increase was necessitated by increased costs of labor and supplies, the school announced.

★ ★ ★

The Fall term of the **Course in Electroplating** given at the **Fort Greene Evening High School,** 29 Fort Greene Place, Brooklyn, N. Y., (formerly Brooklyn Evening Technical High School) will begin on September 11, 1957.

The session is divided into classroom discussion and laboratory experiments. The classroom topics will include simple calculations, reading graphs, chemistry of the plating tank, pH, wetting agents, pitting and deionizing. The laboratory experiments will include solution analysis, Hull cell studies and anodizing.

Registration begins September 9, 1957, and will be held daily thereafter from 7:00 to 9:00 P.M. Classes will meet on Tuesday and Thursday from 6:45 to 8:15 P.M. including about six Fridays. The term begins September 11 and ends January 31, 1958. Register with **Louis Serota** in Room BW17 or 3E10.

★ ★ ★

Richard S. Morse, president of **National Research Corporation,** gave the keynote address at the one week course in vacuum metallurgy that was given at **New York University** by the **Department of Metallurgical Engineering** on June 10-14, 1957.

The course is given in recognition of the growing significance of vacuum metallurgy in research and industry as a means of protecting metals from the damaging effects of atmospheric gases. Most of the "new" metals such as titanium, zirconium, molybdenum and niobium can be successfully melted, cast or heat treated under high vacuum. Many of the older metals like steel can be improved in physical, chemical and electrical properties by the use of vacuum processes.

The rapid accumulation of basic and applied information in vacuum metallurgy was presented in 26 lectures by experts in the field over the five-day period.

National Research Corporation lecturers include H. A. Steinherz, who spoke on "Vacuum Pumping Systems"; J. L. Ham, speaking on "Skull and Permanent Electrode Melting"; P. J. Clough on "Vacuum Coating Processes"; and F. C. Benner on "Analysis Techniques." J. H. Durant served as moderator in the first day's meeting of the course.

SOCIETIES

Glenn H. Friedt, Jr., has been elected president of the **Detroit Branch, American Electroplaters' Society.** Mr. Friedt, vice president of United Platers, Inc., is a past president and director of the Plating Institute of Michigan and a director of the National Association of Metal Finishers.

Other new officers of the Detroit Branch, A.E.S., are **Manuel Ben** of General Motors, first vice president; **Donald M. Bigge** of Chrysler, second

Glenn H. Friedt, Jr.

vice president, and **Edward J. Kubis** of Wyandotte Chemicals Corp., secretary-treasurer.

The executive committee of the Detroit Branch will be composed of these officers plus Past President Howard J. McAleer of Formax Manufacturing Co.; James D. Thomas of General Motors; Fred E. Olmstead of Studebaker-Packard, Guy Cummings, Jr., of Frederic B. Stevens, Inc., John F. Siefen of Siefen Compounds, Herberth E. Head of Chrysler, Leland M. Morse of Chrysler, and C. F. Nixon of General Motors Corporation.

NECROLOGY

Walter W. Freystedt, vice president of Alsop Engineering Corp., died on June 2, 1957.

Mr. Freystedt had been associated with Alsop for over 30 years. For the last 20 years, he was in charge of the company's New York Office.

★ ★ ★

Silvio C. Taormina, Platers Research Corporation and Platers Technical Service, Inc., executive secretary of the Masters' Electro-Plating Association, and technical advisor to the National Association of Metal Finishers, died on June 8 at the age of 54.

Mr. Taormina was born in Sciacca, Sicily. His early employment in the various facets of industry finally brought him in contact with the electroplating and finishing industry, which fired his imagination and became his chosen field. While employed at U. S. Research in Long Island City, he became associated with Dr. L. C. Pan, one of the eminent electrochemists of the time. With his quick mind and desire to learn, Mr. Taormina acquired a wealth of knowledge and experience that laid the technical foundation for organization of the consulting firm of Platers Technical Service, Inc., in 1937.

When he was chosen executive secretary of the Masters' Electro-Plating Association in 1951, he immediately devoted his time and efforts to the reviving of interest and activity in the national organization. Through his persistence and the application of his principles, through hard work and with his burning ambition to secure recognition for the electroplating industry, he was able to give stature to the National Association of Metal Finishers, of which he became technical advisor.

Silvio C. Taormina

Soon after, he took up the nickel battle to help the industry obtain its just share of nickel. His efforts resulted in a Congressional Committee Investigation. Upon completion of the hearings, the committee directed the Office of Defense Mobilization, the Department of Commerce, and all the large nickel suppliers to modify their policies in accordance with the arguments and plan of Silvio C. Taormina.

The industry has lost a friend and a champion, and his passing leaves a void in the hearts of his many friends and associates.

MEETINGS of INTEREST to FINISHERS

Oct. 6-10. Fall Meeting, Electrochemical Society, Statler Hotel, Buffalo, N. Y.

Oct. 30-Nov. 2. 22nd Paint Industries' Show and 35th Annual Meeting, Federation of Paint and Varnish Production Clubs, Bellevue-Stratford Hotel, Philadelphia, Pa.

Nov. 2. Annual Educational Session and Banquet, Philadelphia Branch, A.E.S., Penn-Sheraton Hotel, Philadelphia, Pa.

May 19-22, 1958. 45th Annual Convention, A. E. S., Hotel Sheraton-Gibson, Cincinnati, Ohio.

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PRODUCT LITERATURE

40. Wood Tanks
Specifications, information, descriptions: wood tanks for liquid processing. Kalamazoo Tank & Silo Co., 1571 Harrison St., Kalamazoo, Mich.

41. Curved-Bar Buffing Compounds
Information on curved-bar buffing compounds for use in automatic buffing machines. Buckingham Products Co., 14100 Fullerton Ave., Detroit 27, Mich.

42. Copper Sulfate
Information on copper sulfate. Phelps-Dodge Refining Corp., 300 Park Ave., New York 22, N. Y.

43. Quartz Ovens
Information on quartz heaters for baking applications. These heaters are said to emit the part of the spectrum most readily absorbed by paints. The Cleveland Process Co., 1965 E. 57th St., Cleveland 3, Ohio.

44. Buffs
Information on the advantages of Schaffner Bias Buffs. Schaffner Manufacturing Co., Inc., Schaffner Center, Emsworth, Pittsburgh 2, Pa.

45. Drum Rotators
Single and double stationary drum rotators for loads up to 2,000 pounds are described in Bulletin No. 2-55. Morse Manufacturing Co., Inc., 762 W. Manlius St., East Syracuse, N. Y.

46. Cold Spray Cleaning
Discussion of the advantages of Jet 50, a non-foaming spray cleaner that can be used at room temperature. Northwest Chemical Co., 9310 Roselawn, Detroit 4, Mich.

47. Paint Pumps
Paasche paint pumps deliver paint directly from the original drum to one or more spray guns. Paasche Airbrush Co., a Division of Cline Electric Mfg. Co., 1909 W. Diversey Parkway, Chicago 14, Illinois.

48. Screen Process Inks
Article entitled "What You Should Know About Screen Process Inks" gives helpful information about the basic principles involved in the application and use of silk screen inks. The Naz-Dar Co., 461 Milwaukee Ave., Chicago 10, Ill.

49. Chromium Plating
Information on chromium plating. Diamond Alkali Co., 300 Union Commerce Bldg., Cleveland 14, Ohio.

50. Plating Test Equipment
Technical information on how Hull Cell Tests Sets can aid in control of plating solutions. R. O. Hull & Co., Inc., 1304 Parsons Ct., Rocky River 16, Ohio.

51. Guide to Better Plating
Technical article tells how to use filters to improve electroplated deposits. Alsop Engineering Co., 1207 Keen St., Milldale, Conn.

52. Copper Anodes
Phosphorized copper anodes help to produce a more uniform copper plate. Details available from American Brass Co., Waterbury 20, Conn.

53. Buffers—Polishers
Catalog illustrates and describes 16 different types and sizes of buffing and polishing machinery. The Standard Electrical Tool Co., 2518 River Rd., Cincinnati 4, Ohio.

54. Primer
Data on Zinoxide, a primer that is recommended for protection of steel products. Lowe Brothers, 424 East Third St., Dayton 2, Ohio.

55. Cabinet Ovens
Cabinet ovens bulletin describes features of Sly Cabinet Ovens for laboratory and production baking, drying and dehydrating. The W. W. Sly Manufacturing Co., 4784 Train Ave., Cleveland 1, Ohio.

56. Phosphatizing Process
Data on the Wyandotte Fos-It process for removing rust and oxides and conditioning metal for application of paint. Wyandotte Chemicals Corp., Wyandotte, Mich.

57. Degreasers
Information on a line of vapor degreasers that ranges from small bench and barrel-type units to large, high-capacity degreasers. Armstrong & White, Chewick, Pa.

58. Tumbling Barrels
Data on variable-speed tumbling barrels that can be filled with parts and abrassive while running, inspected while running, and emptied while running. The Henderson Bros. Co., 134 S. Leonard St., Waterbury, Conn.

59. Aluminum Corrosion Preventive
Information on protecting aluminum with Bonderite 710 and 720, both of which can be applied by spray, immersion, or brushing. Parker Rust Proof Co., 2172 E. Milwaukee, Detroit 11, Mich.

60. Ovens
"Ovens for Industry" Catalog contains complete data on ovens for every baking and drying application. Kirk & Blum Mfg. Co., 3116 Forrer Ave., Cincinnati 9, Ohio.

61. Polishing Machinery
Information on tandem-roll horizontal polishing machines for polishing sheet, plates, extrusions, trim. Central Machine Wks., 74 Commercial St., Worcester 8, Mass.

62. Amorphous Coating Base
Information on Metabond, an amorphous coating base for improving the adhesion and corrosion resistance of any paint finish. International Rustproof Corp., 1575 Merwin Ave., Cleveland 13, Ohio.

63. Abrasive Belt Polishing Machines
Information on various types and sizes of abrasive belt polishing machines. The Hill Acme Co., 1201 W. 65th St., Cleveland 2, Ohio.

64. Pearlescent Finish
Data on Nacromer YNC, a recently developed synthetic that can be used to provide a wide range of lustrous effects by adding transparent pigments and dyes. Dept. C, The Mearl Corp., 124 E. 40th St., New York 16, N. Y.

65. Barrel Finishing Booklet
Booklet describes barrel finishing equipment and materials and how to use them. The Abbott Ball Co., 1064 New Britain Ave., Hartford 10, Conn.

66. Epoxies
Data on epoxy-based paints. Universal Paint & Varnish, Inc., Box 199, Bedford, Ohio.

67. Plastic Hoods and Fume Ducts
Complete information on corrosion-proof, glass-fiber-reinforced plastic ducts and hoods. The Ceilcote Co., Inc., 4848 Ridge Rd., Cleveland 9, Ohio.

68. Rust Remover
Literature describes Metalprep Rust Remover. Neilson Chemical Co., 6561 Benson St., Detroit 7, Mich.

69. Complete Finishing Systems
Catalog describes complete, conveyorized, integrated paint-finishing systems, ovens, air make-up units, spray booths and washers. Burdett Manufacturing Co., 4916 S. Monitor Ave., Chicago 38, Ill.

70. Paint Arrestors
Information on RP Paint Arrestors, which filter out overspray paint from spray booth exhaust air, are easily replaceable. Research Products Corp., Dept. 38, Madison 10, Wisconsin.

71. Oven Sections
Literature on lava-coated infra-red generators, which can be used to build heating panels or complete ovens. Dri-Quik Div., Dry Clime Lamp Corp., Greensburg, Ind.

72. Acrylic Enamel
Information about Duracron, a recently developed thermo-setting acrylic enamel that is said to be particularly suitable for finishing refrigerators, home laundry equipment, ranges, air conditioning units. Pittsburgh Plate Glass Co., Industrial Sales Div., 1 Gateway Center, Pittsburgh, Pa.

73. Isophthalic-Based Paints
Literature describes advantages of isophthalic alkyd-based paints. Oronite Chemical Co., 200 Bush St., San Francisco 20, Calif.

74. Barrel Finishing Abrasives
Information on Norton barrel finishing abrasives and methods. Norton Co., Worcester 6, Mass.

75. Improve Your Electroplating Operations
This report tells how to solve common electroplating problems with OFHC Anodes. The American Metal Co., Ltd., 61 Broadway, New York 6, N. Y.

76. Cleaning Machinery
Information on custom-designed metal cleaning and treating machinery. Cincinnati Cleaning & Finishing Mchry. Co., 2008 Hageman St., Cincinnati 41, Ohio.

77. Paint Stripper
Complete technical information on RAP Tank Solvent for removing organic finishes in continuous, conveyorized stripping applications. Pockrandt, Inc., 1108 Marquette St., Bay City, Mich.

78. Silver Anodes
Information on obtaining anodes custom-shaped for specialized applications. The American Platinum Works, 231 New Jersey Railroad Ave., Newark 5, N. J.

79. Tack Cloth
Use of Bond Tack Cloths assure a speck-free finish. Samples available. Bond Chemical Products Co., 2639 N. Clybourn Ave., Chicago 14, Ill.

80. Phosphate Coatings
Information on a complete line of phosphate coatings for various applications. Pennsalt Chemicals Corp., 3 Penn Center, Philadelphia 2, Pa.

81. Buffing Compound
Data on the advantages of Stutz Liquispray Buffing Compound. The Stutz Co., 4410 Carroll Ave., Chicago 24, Ill.

82. Brass Plating Solution
Technical bulletin describes a bright brass plating solution that can be obtained in a variety of colors, to match any sample. True Brite Chemical Products Co., Box 31, Oakville, Conn.

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83. Buffing Compounds
Information on a complete line of buffing compounds: bar, tube, extruded or liquid form. McAleer Mfg. Corp., 101 S. Waterman, Detroit 17, Mich.

84. Zinc Plating Solutions
Technical bulletin on the Promat zinc plating solutions. Promat Div., Poor & Co., Dept. PF-3, 851 S. Market St., Waukegan, Ill.

85. Degreasing Solvent
Information on the advantageous features of Blacosolv Degreasing Solvent. G. S. Blakeslee & Co., 1844 S. Laramie Ave., Chicago 50, Ill.

86. Phosphate Coatings
Literature describes complete line of phosphate coatings, including zinc-iron phosphates, iron phosphates and phosphates for cold extrusions. Detrex Chemical Industries, Inc., Box 501-C, Detroit 32, Mich.

87. Electrostatic Spray Painting
No. 2 Process Brochure cites many on-the-job examples of electrostatic spray painting of a wide variety of products. Ransburg Electro-Coating Corp., Barth & Sanders, Indianapolis 7, Ind.

88. Contact Wheels
Details on the advantages of the R57 Contact Wheel. Chicago Rubber Co., 651 S. Market St., Waukegan, Ill.

89. Filter Pumps
Data on filter pumps made of corrosion-resistant alloys for every electroplating and industrial solution from pH 0 to pH 14. Sethco Mfg. Co., 2292 Babylon Turnpike, Merrick, L. I., N. Y.

90. Metal Cleaners
Information on cleaners formulated with Dow Caustic Soda or Dow Sodium Orthosilicate. The Dow Chemical Co., Dept. AL610L, Midland, Mich.

91. Rack Coating
Literature describes Unichrome Coating 218X, a plastisol used to insulate and protect plating racks. Metal & Thermit Corp., Rahway, N. J.

92. Primer
Information on Gripalloy, a satin-sheen primer that is available in black and colors, adheres to 25 different metals. Tenax Finishing Products Co., Newark 5, N. J.

93. Protect Plated Parts
Literature describes Miccrolac, a mirror-finish, water-white lacquer that protects polished or plated metals. Michigan Chrome & Chemical Co., 8615 Grinnell Ave., Detroit 13, Mich.

94. Waste Recovery
Literature and reprints of articles on Industrial Plating Waste Recovery Systems. Industrial Filter & Pump Mfg. Co., 5904 Ogden Ave., Chicago 50, Ill.

95. Spray Booth Maintenance
Information on the advantages of using Liquid Envelope strippable coating to protect spray booth walls from accumulation of overspray paint. Better Finishes & Coatings, Inc., 268 Doremus Ave., Newark 5, N. J.

96. Pre-Assembled Buffs
Literature tells how complete buffing heads (up to 100 sections each) can be made up in advance, thus saving time during replacement, by using American Buff's patented pre-assembly feature. American Buff Co., 2414 S. LaSalle St., Chicago 16, Ill.

97. Automatic Plating Machine
Illustrated folder describes "Little Steve," an immersion processing machine that can process up to 40,000 pieces per day, has many uses. Frederic B. Stevens, Inc., Detroit 16, Mich.

98. Metal Cleaners
Information on a complete line of metal cleaners. Cowles Chemical Co., 7016 Euclid Ave., Cleveland 3, Ohio.

99. Cleaning Machine
Information on the Ransomatic, a versatile machine that can be built to clean small parts in baskets or large parts up to 60 feet long. Ransohoff, Inc., 610 N. Fifth St., Hamilton, Ohio.

100. Chemical Polishing
Information on chromate conversion coatings that also have the ability to chemically polish zinc and cadmium plate, zinc die castings and copper alloys. Allied Research Products, Inc., 4004-06 E. Monument St., Baltimore 5, Maryland.

101. Polishing Unusual Shapes
Data on the Acme G4 polishing and buffing machine, which is said to give more complete and more consistent high quality finishing of unusual shapes. Acme Manufacturing Co., 1400 E. Nine Mile Rd., Detroit 20, Mich.

102. Anodes
Information on copper, nickel and zinc anodes available in a variety of sizes and shapes. New Jersey Metals Co., 724 Rockefeller St., Elizabeth 2, N. J.

103. Barrel Finishing Processes
Technical data folder contains valuable information on the Roto-Finish processes for deburring, descaling, grinding, polishing and coloring. Roto-Finish Co., 3704 Milham Rd., Kalamazoo, Mich.

104. Bright Nickel
Literature describes the advantages of the Harshaw Nubrite bright nickel process. Harshaw Chemical Co., 1945 E. 97th St., Cleveland 6, Ohio.

105. Selenium Rectifiers
Complete information on H-VW-M's line of selenium rectifiers. Bulletin ER-107 describes electrical construction features of these electroplating rectifiers, detailed specification tables, photographs of various models. Hanson-Van Winkle-Munning Co., Church St., Matawan, N. J.

106. Precision Barrel Finishing
Booklet on the barrel finishing process contains valuable information on cutting down, descaling, burnishing. Oakite Products, Inc., 20 Rector St., New York 6, N. Y.

107. Oxide Finishes
Information on Ebonol oxide finishes for steel, copper, brass and zinc. Enthone, Inc., 442 Elm St., New Haven 11, Conn.

108. Extrusion Finisher
Information on the Hammond Reversing Extrusion Finisher, designed specifically for polishing extrusions, trim and mouldings. Hammond Machinery Builders, Inc., 1622 Douglas Ave., Kalamazoo, Mich.

109. Phosphate Coatings
Bulletin 1380 describes various types of ACP Granodine, gives information which will help select the proper one for a particular application. American Chemical Paint Co., Ambler 14, Pa.

110. Plastic Lining
Data folder gives instructions for application of Amer-Plate No. 94Y to metal and concrete surfaces. Amercoat Corp., Dept. EG, 4809 Firestone Blvd., South Gate, Calif.

111. Siphon Cup
Bulletin L-47 describes Bink Model L-47 Siphon Cup as well as a complete line of siphon and pressure cups. Binks Mfg. Co., 3118-40 Carroll Ave., Chicago 12, Ill.

112. Valve Warmer
Form V-2 shows a new development—the Dean Thermo Panel Coil Valve Warmer. Dean Thermo-Panel Coil Div., Dean Products, Inc., 622 Franklin Ave., Brooklyn 38, N. Y.

113. Plating Course
Data on a correspondence course in electroplating. Joseph B. Kushner Electroplating School, 115 Broad St., Stroudsburg 12F, Pa.

114. Filter Guide
An eight-page brochure illustrates six major filter types for industrial applications, includes descriptions of filter operation, applications, degree of filtration and flow-rate capacities. Industrial Filtration Co., 166 Industrial Ave., Lebanon, Ind.

115. Metallic Powders
Folder contains color chart that shows wide range of metallic finishes that can be produced with Cres-Lite Bronze Powders. Crescent Bronze Powder Co., 116-122 W. Illinois St., Chicago 10, Ill.

116. Spray Booth Catalog
Spray booths of every type and size, for various applications, are featured in DeVilbiss Publication I-7000. Included are full descriptions and specifications for custom-design units and/or "ready-made" units, as well as all information necessary to select the right type, size and features of a spray booth. DeVilbiss Co., Dept. 318, Toledo 1, Ohio.

117. Nine Ways to Cut Electroplating Costs
Booklet points out methods of improving electroplating. Includes sections on how to select the proper cleaning compound; rules for determining solution life; use of titrations; how to avoid unnecessary contamination of solutions; tips on thorough rinsing; and pointers on racking procedure. Metal Industries Dept., the Diversey Corp., 1820 W. Roscoe St., Chicago 13, Ill.

118. Preparing Aluminum
Preparing aluminum for spot-welding, phosphatizing, anodizing and painting with a dry anhydrous salt (Deoxidex) used in a water solution is fully described in Technical Data Sheet No. 25, a three-page usage and instruction sheet. Mac Dermid Inc., Waterbury 20, Connecticut.

119. Black Finish
Folder describes blackening process for steel, its advantages and applications. Includes a cleaning guide for various metals. Du-Lite Chemical Corp., Middletown, Conn.

120. Instructions for Use of Rhodium Plating Solutions
Handy, pocket-sized booklet gives valuable information on the proper procedures to use for rhodium plating. Includes sections on solution preparation, work preparation, temperatures and current, tanks, anodes, bath maintenance, and so on. Sigmund Cohn Mfg. Co., Inc., 121 S. Columbus Ave., Mount Vernon, N. Y.

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121. Plastic Blowers and Fans
Plastic fans and blowers ranging in capacity from 143 to 15,000 c.f.m. are described in a data folder. These fans are constructed of rigid polyvinyl chloride, which has excellent resistance to a variety of corrosive chemicals. Industrial Plastic Fabricators, Inc., Norwood, Mass.

122. Paint Rejuvenator
Miracle Challenger Paint Rejuvenator mixes four quarts of paint in one quick, easy operation, without opening the cans. Miracle Paint Rejuvenator Co., 127 E. Ninth St., St. Paul 1, Minn.

123. Water-Wash Spray Booth
Diagrams in a four page folder show the advantageous construction features of the new Ramco Multi Wash Spray Booth. Ramco Equipment Corp., 811 Edgewater Rd., New York 59, N. Y.

124. Air Sander
Description and specifications for a light-weight air sander are given in Bulletin No. 800-1. Magnetic-Pneumatic Division, Sundstrand Machine Tool Co., Rockford, Illinois.

125. Phosphate Coatings
A detailed phosphatizing folder, covering the entire Turcoat line of phosphatizing and metal protective coating materials. Includes a valuable reference chart, which describes the purpose and make-up of each type of coating, recommended uses, applicable government specifications, methods of application, equipment requirements, metals that can be coated, coating weights and basic operational cycles. Turco Products, Inc., 6135 S. Central Ave., Los Angeles 1, Calif.

126. Guide To Plating Power
An eleven-page booklet shows various types of rectifiers and accessories. Includes basic units with remote control, self-contained units, barrel plating units, and units designed especially for anodizing. Sel-Rex Corp., Nutley 10, N. J.

127. Barrel Finishing Machinery
Catalog FS-1 describes and illustrates the redesigned Futurama Series of barrel finishing machinery. Includes specifications for each model, descriptions of advantageous features. Speed-D-Burr Corp., 3613-B San Fernando Rd., Glendale 4, Calif.

128. Roller Coaters
Folder includes photographs and description of Gasway Rollacoat Finisher No. 32-B. Gasway Corp., 6463 N. Ravenswood Ave., Chicago 26, Ill.

129. Felt Wheels
Information on felt polishing wheels and bobs, used for producing highly polished surfaces. Bacon Felt Co., 447 W. Water St., Taunton, Mass.

130. Vapor Degreasing Manual
A comprehensive, 32-page manual on the vapor degreasing process, equipment and accessories. Circo Equipment Co., 51 Terminal Ave., Clark (Rahway), N. J.

131. D. C. Power
Data on the Ther Reactron, a rectifier that automatically maintains constant voltage. Available in germanium, selenium or silicon types. Ther Electric & Machine Wks., 13A S. Jefferson St., Chicago 6, Ill.

132. Steam Spray Painting Equipment
Facts about the DuPont steam spray painting process, equipment required to make it work most efficiently. Pantex Manufacturing Corp., Box 660 AP, Pawtucket 5, R. I.

133. Bright Zinc
Technical Bulletin ZP-ZB-57 describes barrel bright zinc plating with recently developed Udylite Bright Zinc Process ZB-57. Includes instructions for cleaning the metal prior to plating; descriptions of equipment, rinsing, drying, solution preparation, bath operation, etc. Udylite Corp., Detroit 11, Mich.

134. Corrosion-Resistant Equipment
Catalog C-14 describes the corrosion-resistant plastic equipment of Haveg Industries, Inc., Wilmington, Delaware. Details Haveg-made equipment: pipes and fittings; valves; fume ducts and fume systems; tanks, towers and accessory supplies; heat exchangers; pressure and vacuum equipment; and agitators. Includes data on chemical-resistant cements, the field construction of plastic equipment, and Haveg's design service. Haveg Industries, Inc., 914 Greenbank Rd., Wilmington 8, Del.

135. Barrel Finishing Machine
Data sheet explains advantages of the 3000 Series Burr-Rite, Sr., a barrel finishing machine that is useful for small to medium-large production runs. Globe Div., Casalbi Co., 546 Wayne St., Jackson, Mich.

136. Finishing Metal Products
Sixteen-page bulletin No. 51 describes modern ways to achieve better finishes, faster production and smoother handling of metal products at lower cost. Despatch Oven Co., 619 S.E. Eighth St., Minneapolis 14, Minn.

137. Paint Pumps
Literature describes pumps that will supply up to six spray guns in a direct or circulating system, direct from the original drum of paint. Spee-Flo Corp., Dept. PF, 720 Polk Ave., Houston, Texas.

138. Plastisol Coatings
Information on vinyl plastisol coatings formulated for use on materials handling equipment, tumbling barrels, plating equipment, and as electrical insulation. Marathon Metal Products, Inc., 20 Front St., Marathon, N. Y.

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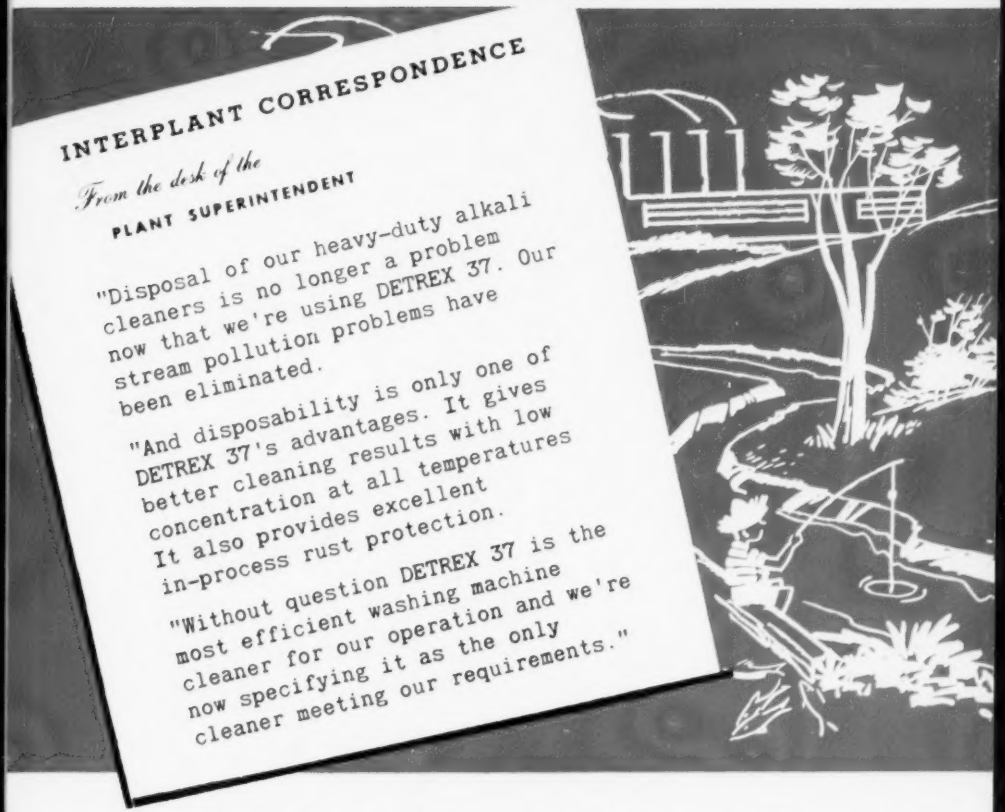
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